APPENDIX

# K

# TABLE 5
# HIGHWAY SPIRAL
# REVISED

## TABLE V

Functions of spirals for varying degrees of curve between 2 minutes and 100 degrees for various values of "a".

Select value of a $\left(= \frac{D}{L}\right)$ to correspond with value of "a" shown in table. Values of corresponding functions are then directly obtainable from the table.

Tables for the following values of "a" are given:

| | | |
|---|---|---|
| a = 0.1 | a = 1.25 | a = 5.5 |
| a = 0.2 | a = 1⅓ | a = 6.0 |
| a = 0.25 | a = 1.5 | a = 6.5 |
| a = 0.3 | a = 1.75 | a = 7.0 |
| a = 0.4 | a = 2.0 | a = 8.0 |
| a = 0.5 | a = 2.5 | a = 9.0 |
| a = 0.6 | a = 3.0 | a = 10.0 |
| a = 0.7 | a = 3.5 | a = 12.5 |
| a = 0.8 | a = 4.0 | a = 15.0 |
| a = 0.9 | a = 4.5 | a = 20.0 |
| a = 1.0 | a = 5.0 | a = 25.0 |

Revised 7/25/03

Designations X & Y have been reversed to match most software

# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.1

| L | D | S | q | p | x | y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°00.6′ | 0°00.03′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°01.2′ | 0°00.12′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°01.8′ | 0°00.27′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°02.4′ | 0°00.48′ | 20.00 | 0.00 | 40.00 | 0.00 | 40.00 | 26.67 | 13.33 |
| 50 | 0°03.0′ | 0°00.75′ | 25.00 | 0.00 | 50.00 | 0.00 | 50.00 | 33.33 | 16.67 |
| 60 | 0°03.6′ | 0°01.08′ | 30.00 | 0.00 | 60.00 | 0.01 | 60.00 | 40.00 | 20.00 |
| 70 | 0°04.2′ | 0°01.47′ | 35.00 | 0.00 | 70.00 | 0.01 | 70.00 | 46.67 | 23.33 |
| 80 | 0°04.8′ | 0°01.92′ | 40.00 | 0.00 | 80.00 | 0.01 | 80.00 | 53.33 | 26.67 |
| 90 | 0°05.4′ | 0°02.43′ | 45.00 | 0.00 | 90.00 | 0.02 | 90.00 | 60.00 | 30.00 |
| 100 | 0°06.0′ | 0°03.00′ | 50.00 | 0.01 | 100.00 | 0.03 | 100.00 | 66.67 | 33.33 |
| 110 | 0°06.6′ | 0°03.63′ | 55.00 | 0.01 | 110.00 | 0.04 | 110.00 | 73.33 | 36.67 |
| 120 | 0°07.2′ | 0°04.32′ | 60.00 | 0.01 | 120.00 | 0.05 | 120.00 | 80.00 | 40.00 |
| 130 | 0°07.8′ | 0°05.07′ | 65.00 | 0.02 | 130.00 | 0.06 | 130.00 | 86.67 | 43.33 |
| 140 | 0°08.4′ | 0°05.88′ | 70.00 | 0.02 | 140.00 | 0.08 | 140.00 | 93.33 | 46.67 |
| 150 | 0°09.0′ | 0°06.75′ | 75.00 | 0.02 | 150.00 | 0.10 | 150.00 | 100.00 | 50.00 |
| 160 | 0°09.6′ | 0°07.68′ | 80.00 | 0.03 | 160.00 | 0.12 | 160.00 | 106.67 | 53.33 |
| 170 | 0°10.2′ | 0°08.67′ | 85.00 | 0.04 | 170.00 | 0.14 | 170.00 | 113.33 | 56.67 |
| 180 | 0°10.8′ | 0°09.72′ | 90.00 | 0.04 | 180.00 | 0.17 | 180.00 | 120.00 | 60.00 |
| 190 | 0°11.4′ | 0°10.83′ | 95.00 | 0.05 | 190.00 | 0.20 | 190.00 | 126.67 | 63.33 |
| 200 | 0°12.0′ | 0°12.00′ | 100.00 | 0.06 | 200.00 | 0.23 | 200.00 | 133.33 | 66.67 |
| 210 | 0°12.6′ | 0°13.23′ | 105.00 | 0.07 | 210.00 | 0.27 | 210.00 | 140.00 | 70.00 |
| 220 | 0°13.2′ | 0°14.52′ | 110.00 | 0.08 | 220.00 | 0.31 | 220.00 | 146.67 | 73.33 |
| 230 | 0°13.8′ | 0°15.87′ | 115.00 | 0.09 | 230.00 | 0.35 | 230.00 | 153.33 | 76.67 |
| 240 | 0°14.4′ | 0°17.28′ | 120.00 | 0.10 | 240.00 | 0.40 | 240.00 | 160.00 | 80.00 |
| 250 | 0°15.0′ | 0°18.75′ | 125.00 | 0.11 | 250.00 | 0.45 | 250.00 | 166.67 | 83.33 |
| 260 | 0°15.6′ | 0°20.28′ | 130.00 | 0.13 | 260.00 | 0.51 | 260.00 | 173.33 | 86.67 |
| 270 | 0°16.2′ | 0°21.87′ | 135.00 | 0.14 | 270.00 | 0.57 | 270.00 | 180.00 | 90.00 |
| 280 | 0°16.8′ | 0°23.52′ | 140.00 | 0.16 | 280.00 | 0.64 | 280.00 | 186.67 | 93.33 |
| 290 | 0°17.4′ | 0°25.23′ | 145.00 | 0.18 | 290.00 | 0.71 | 290.00 | 193.33 | 96.67 |
| 300 | 0°18.0′ | 0°27.00′ | 150.00 | 0.20 | 300.00 | 0.79 | 300.00 | 200.00 | 100.00 |
| 310 | 0°18.6′ | 0°28.83′ | 155.00 | 0.22 | 310.00 | 0.87 | 310.00 | 206.67 | 103.33 |
| 320 | 0°19.2′ | 0°30.72′ | 160.00 | 0.24 | 320.00 | 0.95 | 320.00 | 213.33 | 106.67 |
| 330 | 0°19.8′ | 0°32.67′ | 165.00 | 0.26 | 330.00 | 1.05 | 330.00 | 220.00 | 110.00 |
| 340 | 0°20.4′ | 0°34.68′ | 170.00 | 0.29 | 340.00 | 1.14 | 340.00 | 226.67 | 113.33 |
| 350 | 0°21.0′ | 0°36.75′ | 175.00 | 0.31 | 350.00 | 1.25 | 350.00 | 233.33 | 116.67 |
| 360 | 0°21.6′ | 0°38.88′ | 180.00 | 0.34 | 360.00 | 1.36 | 360.00 | 240.00 | 120.00 |
| 370 | 0°22.2′ | 0°41.07′ | 185.00 | 0.37 | 369.99 | 1.47 | 370.00 | 246.67 | 123.34 |
| 380 | 0°22.8′ | 0°43.32′ | 190.00 | 0.40 | 379.99 | 1.60 | 380.00 | 253.34 | 126.67 |
| 390 | 0°23.4′ | 0°45.63′ | 195.00 | 0.43 | 389.99 | 1.73 | 390.00 | 260.00 | 130.00 |
| 400 | 0°24.0′ | 0°48.00′ | 200.00 | 0.47 | 399.99 | 1.86 | 400.00 | 266.67 | 133.34 |
| 410 | 0°24.6′ | 0°50.43′ | 205.00 | 0.50 | 409.99 | 2.00 | 410.00 | 273.34 | 136.67 |
| 420 | 0°25.2′ | 0°52.92′ | 210.00 | 0.54 | 419.99 | 2.16 | 420.00 | 280.00 | 140.00 |
| 430 | 0°25.8′ | 0°55.47′ | 215.00 | 0.58 | 429.99 | 2.31 | 430.00 | 286.67 | 143.34 |
| 440 | 0°26.4′ | 0°58.08′ | 220.00 | 0.62 | 439.99 | 2.48 | 439.99 | 293.34 | 146.67 |
| 450 | 0°27.0′ | 1°00.75′ | 225.00 | 0.66 | 449.99 | 2.65 | 449.99 | 300.00 | 150.00 |
| 460 | 0°27.6′ | 1°03.48′ | 230.00 | 0.71 | 459.98 | 2.83 | 459.99 | 306.67 | 153.34 |
| 470 | 0°28.2′ | 1°06.27′ | 235.00 | 0.75 | 469.98 | 3.02 | 469.99 | 313.34 | 156.67 |
| 480 | 0°28.8′ | 1°09.12′ | 240.00 | 0.80 | 479.98 | 3.22 | 479.99 | 320.01 | 160.01 |
| 490 | 0°29.4′ | 1°12.03′ | 245.00 | 0.86 | 489.98 | 3.42 | 489.99 | 326.67 | 163.34 |
| 500 | 0°30.0′ | 1°15.00′ | 250.00 | 0.91 | 499.98 | 3.64 | 499.99 | 333.34 | 166.67 |



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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.1—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 0°30.6′ | 1°18.03′ | 255.00 | 0.96 | 509.97 | 3.86 | 509.99 | 340.01 | 170.01 |
| 520 | 0°31.2′ | 1°21.12′ | 260.00 | 1.02 | 519.97 | 4.09 | 519.99 | 346.68 | 173.34 |
| 530 | 0°31.8′ | 1°24.27′ | 264.99 | 1.08 | 529.97 | 4.33 | 529.99 | 353.34 | 176.68 |
| 540 | 0°32.4′ | 1°27.48′ | 269.99 | 1.15 | 539.97 | 4.58 | 539.98 | 360.01 | 180.01 |
| 550 | 0°33.0′ | 1°30.75′ | 274.99 | 1.21 | 549.96 | 4.84 | 549.98 | 366.68 | 183.35 |
| 560 | 0°33.6′ | 1°34.08′ | 279.99 | 1.28 | 559.96 | 5.11 | 559.98 | 373.35 | 186.68 |
| 570 | 0°34.2′ | 1°37.47′ | 284.99 | 1.35 | 569.95 | 5.39 | 569.98 | 380.02 | 190.01 |
| 580 | 0°34.8′ | 1°40.92′ | 289.99 | 1.42 | 579.95 | 5.68 | 579.98 | 386.68 | 193.35 |
| 590 | 0°35.4′ | 1°44.43′ | 294.99 | 1.49 | 589.95 | 5.97 | 589.98 | 393.35 | 196.68 |
| 600 | 0°36.0′ | 1°48.00′ | 299.99 | 1.57 | 599.94 | 6.28 | 599.97 | 400.02 | 200.02 |
| 610 | 0°36.6′ | 1°51.63′ | 304.99 | 1.65 | 609.94 | 6.60 | 609.97 | 406.69 | 203.35 |
| 620 | 0°37.2′ | 1°55.32′ | 309.99 | 1.73 | 619.93 | 6.93 | 619.97 | 413.36 | 206.69 |
| 630 | 0°37.8′ | 1°59.07′ | 314.99 | 1.82 | 629.92 | 7.27 | 629.97 | 420.03 | 210.02 |
| 640 | 0°38.4′ | 2°02.88′ | 319.99 | 1.91 | 639.92 | 7.62 | 639.96 | 426.70 | 213.36 |
| 650 | 0°39.0′ | 2°06.75′ | 324.99 | 2.00 | 649.91 | 7.99 | 649.96 | 433.36 | 216.69 |
| 660 | 0°39.6′ | 2°10.68′ | 329.98 | 2.09 | 659.90 | 8.36 | 659.96 | 440.03 | 220.03 |
| 670 | 0°40.2′ | 2°14.67′ | 334.98 | 2.19 | 669.90 | 8.75 | 669.95 | 446.70 | 223.37 |
| 680 | 0°40.8′ | 2°18.72′ | 339.98 | 2.29 | 679.89 | 9.15 | 679.95 | 453.37 | 226.70 |
| 690 | 0°41.4′ | 2°22.83′ | 344.98 | 2.39 | 689.88 | 9.55 | 689.95 | 460.04 | 230.04 |
| 700 | 0°42.0′ | 2°27.00′ | 349.98 | 2.49 | 699.87 | 9.98 | 699.94 | 466.71 | 233.37 |
| 710 | 0°42.6′ | 2°31.23′ | 354.98 | 2.60 | 709.86 | 10.41 | 709.94 | 473.38 | 236.71 |
| 720 | 0°43.2′ | 2°35.52′ | 359.98 | 2.71 | 719.85 | 10.86 | 719.93 | 480.05 | 240.05 |
| 730 | 0°43.8′ | 2°39.87′ | 364.97 | 2.83 | 729.84 | 11.31 | 729.93 | 486.72 | 243.38 |
| 740 | 0°44.4′ | 2°44.28′ | 369.97 | 2.95 | 739.83 | 11.79 | 739.92 | 493.39 | 246.72 |
| 750 | 0°45.0′ | 2°48.75′ | 374.97 | 3.07 | 749.82 | 12.27 | 749.92 | 500.06 | 250.06 |
| 760 | 0°45.6′ | 2°53.28′ | 379.97 | 3.19 | 759.81 | 12.77 | 759.91 | 506.73 | 253.39 |
| 770 | 0°46.2′ | 2°57.87′ | 384.97 | 3.32 | 769.79 | 13.28 | 769.91 | 513.41 | 256.73 |
| 780 | 0°46.8′ | 3°02.52′ | 389.96 | 3.45 | 779.78 | 13.80 | 779.90 | 520.08 | 260.07 |
| 790 | 0°47.4′ | 3°07.23′ | 394.96 | 3.59 | 789.77 | 14.34 | 789.90 | 526.75 | 263.41 |
| 800 | 0°48.0′ | 3°12.00′ | 399.96 | 3.72 | 799.75 | 14.89 | 799.89 | 533.42 | 266.75 |
| 810 | 0°48.6′ | 3°16.83′ | 404.96 | 3.86 | 809.73 | 15.46 | 809.88 | 540.09 | 270.08 |
| 820 | 0°49.2′ | 3°21.72′ | 409.95 | 4.01 | 819.72 | 16.03 | 819.87 | 546.77 | 273.42 |
| 830 | 0°49.8′ | 3°26.67′ | 414.95 | 4.16 | 829.70 | 16.63 | 829.87 | 553.44 | 276.76 |
| 840 | 0°50.4′ | 3°31.68′ | 419.95 | 4.31 | 839.68 | 17.24 | 839.86 | 560.11 | 280.10 |
| 850 | 0°51.0′ | 3°36.75′ | 424.94 | 4.47 | 849.66 | 17.86 | 849.85 | 566.78 | 283.44 |
| 860 | 0°51.6′ | 3°41.88′ | 429.94 | 4.62 | 859.64 | 18.50 | 859.84 | 573.46 | 286.78 |
| 870 | 0°52.2′ | 3°47.07′ | 434.94 | 4.79 | 869.62 | 19.15 | 869.83 | 580.13 | 290.12 |
| 880 | 0°52.8′ | 3°52.32′ | 439.93 | 4.95 | 879.60 | 19.82 | 879.82 | 586.81 | 293.46 |
| 890 | 0°53.4′ | 3°57.63′ | 444.93 | 5.13 | 889.57 | 20.50 | 889.81 | 593.48 | 296.80 |
| 900 | 0°54.0′ | 4°03.00′ | 449.93 | 5.30 | 899.55 | 21.20 | 899.80 | 600.16 | 300.14 |
| 910 | 0°54.6′ | 4°08.43′ | 454.92 | 5.48 | 909.52 | 21.91 | 909.79 | 606.83 | 303.48 |
| 920 | 0°55.2′ | 4°13.92′ | 459.92 | 5.66 | 919.50 | 22.64 | 919.78 | 613.51 | 306.83 |
| 930 | 0°55.8′ | 4°19.47′ | 464.91 | 5.85 | 929.47 | 23.39 | 929.76 | 620.19 | 310.17 |
| 940 | 0°56.4′ | 4°25.08′ | 469.91 | 6.04 | 939.44 | 24.15 | 939.75 | 626.86 | 313.51 |
| 950 | 0°57.0′ | 4°30.75′ | 474.90 | 6.23 | 949.41 | 24.93 | 949.74 | 633.54 | 316.85 |
| 960 | 0°57.6′ | 4°36.48′ | 479.90 | 6.43 | 959.38 | 25.72 | 959.72 | 640.22 | 320.20 |
| 970 | 0°58.2′ | 4°42.27′ | 484.89 | 6.64 | 969.35 | 26.54 | 969.71 | 646.90 | 323.54 |
| 980 | 0°58.8′ | 4°48.12′ | 489.89 | 6.84 | 979.31 | 27.36 | 979.69 | 653.57 | 326.89 |
| 990 | 0°59.4′ | 4°54.03′ | 494.88 | 7.05 | 989.28 | 28.21 | 989.68 | 660.25 | 330.23 |
| 1000 | 1°00.0′ | 5°00.00′ | 499.87 | 7.27 | 999.24 | 29.07 | 999.66 | 666.93 | 333.58 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.2

| L | D | S | q | p | x | y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°01.2′ | 0°00.06′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°02.4′ | 0°00.24′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°03.6′ | 0°00.54′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°04.8′ | 0°00.96′ | 20.00 | 0.00 | 40.00 | 0.00 | 40.00 | 26.67 | 13.33 |
| 50 | 0°06.0′ | 0°01.50′ | 25.00 | 0.00 | 50.00 | 0.01 | 50.00 | 33.33 | 16.67 |
| 60 | 0°07.2′ | 0°02.16′ | 30.00 | 0.00 | 60.00 | 0.01 | 60.00 | 40.00 | 20.00 |
| 70 | 0°08.4′ | 0°02.94′ | 35.00 | 0.00 | 70.00 | 0.02 | 70.00 | 46.67 | 23.33 |
| 80 | 0°09.6′ | 0°03.84′ | 40.00 | 0.01 | 80.00 | 0.03 | 80.00 | 53.33 | 26.67 |
| 90 | 0°10.8′ | 0°04.86′ | 45.00 | 0.01 | 90.00 | 0.04 | 90.00 | 60.00 | 30.00 |
| 100 | 0°12.0′ | 0°06.00′ | 50.00 | 0.01 | 100.00 | 0.06 | 100.00 | 66.67 | 33.33 |
| 110 | 0°13.2′ | 0°07.26′ | 55.00 | 0.02 | 110.00 | 0.08 | 110.00 | 73.33 | 36.67 |
| 120 | 0°14.4′ | 0°08.64′ | 60.00 | 0.03 | 120.00 | 0.10 | 120.00 | 80.00 | 40.00 |
| 130 | 0°15.6′ | 0°10.14′ | 65.00 | 0.03 | 130.00 | 0.13 | 130.00 | 86.67 | 43.33 |
| 140 | 0°16.8′ | 0°11.76′ | 70.00 | 0.04 | 140.00 | 0.16 | 140.00 | 93.33 | 46.67 |
| 150 | 0°18.0′ | 0°13.50′ | 75.00 | 0.05 | 150.00 | 0.20 | 150.00 | 100.00 | 50.00 |
| 160 | 0°19.2′ | 0°15.36′ | 80.00 | 0.06 | 160.00 | 0.24 | 160.00 | 106.67 | 53.33 |
| 170 | 0°20.4′ | 0°17.34′ | 85.00 | 0.07 | 170.00 | 0.29 | 170.00 | 113.33 | 56.67 |
| 180 | 0°21.6′ | 0°19.44′ | 90.00 | 0.08 | 180.00 | 0.34 | 180.00 | 120.00 | 60.00 |
| 190 | 0°22.8′ | 0°21.66′ | 95.00 | 0.10 | 190.00 | 0.40 | 190.00 | 126.67 | 63.33 |
| 200 | 0°24.0′ | 0°24.00′ | 100.00 | 0.12 | 200.00 | 0.47 | 200.00 | 133.33 | 66.67 |
| 210 | 0°25.2′ | 0°26.46′ | 105.00 | 0.13 | 210.00 | 0.54 | 210.00 | 140.00 | 70.00 |
| 220 | 0°26.4′ | 0°29.04′ | 110.00 | 0.15 | 220.00 | 0.62 | 220.00 | 146.67 | 73.33 |
| 230 | 0°27.6′ | 0°31.74′ | 115.00 | 0.18 | 230.00 | 0.71 | 230.00 | 153.33 | 76.67 |
| 240 | 0°28.8′ | 0°34.56′ | 120.00 | 0.20 | 240.00 | 0.80 | 240.00 | 160.00 | 80.00 |
| 250 | 0°30.0′ | 0°37.50′ | 125.00 | 0.23 | 250.00 | 0.91 | 250.00 | 166.67 | 83.33 |
| 260 | 0°31.2′ | 0°40.56′ | 130.00 | 0.26 | 260.00 | 1.02 | 260.00 | 173.33 | 86.67 |
| 270 | 0°32.4′ | 0°43.74′ | 135.00 | 0.29 | 270.00 | 1.15 | 270.00 | 180.00 | 90.00 |
| 280 | 0°33.6′ | 0°47.04′ | 140.00 | 0.32 | 279.99 | 1.28 | 280.00 | 186.67 | 93.34 |
| 290 | 0°34.8′ | 0°50.46′ | 145.00 | 0.35 | 289.99 | 1.42 | 290.00 | 193.34 | 96.67 |
| 300 | 0°36.0′ | 0°54.00′ | 150.00 | 0.39 | 299.99 | 1.57 | 300.00 | 200.00 | 100.00 |
| 310 | 0°37.2′ | 0°57.66′ | 155.00 | 0.43 | 309.99 | 1.73 | 310.00 | 206.67 | 103.34 |
| 320 | 0°38.4′ | 1°01.44′ | 160.00 | 0.48 | 319.99 | 1.91 | 320.00 | 213.34 | 106.67 |
| 330 | 0°39.6′ | 1°05.34′ | 165.00 | 0.52 | 329.99 | 2.09 | 329.99 | 220.00 | 110.00 |
| 340 | 0°40.8′ | 1°09.36′ | 170.00 | 0.57 | 339.99 | 2.29 | 339.99 | 226.67 | 113.34 |
| 350 | 0°42.0′ | 1°13.50′ | 175.00 | 0.62 | 349.98 | 2.49 | 349.99 | 233.34 | 116.67 |
| 360 | 0°43.2′ | 1°17.76′ | 180.00 | 0.68 | 359.98 | 2.71 | 359.99 | 240.01 | 120.01 |
| 370 | 0°44.4′ | 1°22.14′ | 185.00 | 0.74 | 369.98 | 2.95 | 369.99 | 246.67 | 123.34 |
| 380 | 0°45.6′ | 1°26.64′ | 190.00 | 0.80 | 379.98 | 3.19 | 379.99 | 253.34 | 126.67 |
| 390 | 0°46.8′ | 1°31.26′ | 195.00 | 0.86 | 389.97 | 3.45 | 389.99 | 260.01 | 130.01 |
| 400 | 0°48.0′ | 1°36.00′ | 199.99 | 0.93 | 399.97 | 3.72 | 399.99 | 266.68 | 133.34 |
| 410 | 0°49.2′ | 1°40.86′ | 204.99 | 1.00 | 409.96 | 4.01 | 409.98 | 273.35 | 136.68 |
| 420 | 0°50.4′ | 1°45.84′ | 209.99 | 1.08 | 419.96 | 4.31 | 419.98 | 280.01 | 140.01 |
| 430 | 0°51.6′ | 1°50.94′ | 214.99 | 1.16 | 429.96 | 4.63 | 429.98 | 286.68 | 143.35 |
| 440 | 0°52.8′ | 1°56.16′ | 219.99 | 1.24 | 439.95 | 4.96 | 439.98 | 293.35 | 146.68 |
| 450 | 0°54.0′ | 2°01.50′ | 224.99 | 1.33 | 449.94 | 5.30 | 449.98 | 300.02 | 150.02 |
| 460 | 0°55.2′ | 2°06.96′ | 229.99 | 1.42 | 459.94 | 5.66 | 459.97 | 306.69 | 153.35 |
| 470 | 0°56.4′ | 2°12.54′ | 234.99 | 1.51 | 469.93 | 6.04 | 469.97 | 313.36 | 156.69 |
| 480 | 0°57.6′ | 2°18.24′ | 239.99 | 1.61 | 479.92 | 6.43 | 479.97 | 320.03 | 160.02 |
| 490 | 0°58.8′ | 2°24.06′ | 244.99 | 1.71 | 489.91 | 6.84 | 489.96 | 326.70 | 163.36 |
| 500 | 1°00.0′ | 2°30.00′ | 249.98 | 1.82 | 499.90 | 7.27 | 499.96 | 333.37 | 166.70 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.2—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 1°01.2′ | 2°36.06′ | 254.98 | 1.93 | 509.89 | 7.72 | 509.95 | 340.04 | 170.03 |
| 520 | 1°02.4′ | 2°42.24′ | 259.98 | 2.04 | 519.88 | 8.18 | 519.95 | 346.71 | 173.37 |
| 530 | 1°03.6′ | 2°48.54′ | 264.98 | 2.17 | 529.87 | 8.66 | 529.94 | 353.38 | 176.71 |
| 540 | 1°04.8′ | 2°54.96′ | 269.98 | 2.29 | 539.86 | 9.16 | 539.94 | 360.05 | 180.04 |
| 550 | 1°06.0′ | 3°01.50′ | 274.97 | 2.42 | 549.85 | 9.68 | 549.93 | 366.72 | 183.38 |
| 560 | 1°07.2′ | 3°08.16′ | 279.97 | 2.55 | 559.83 | 10.21 | 559.93 | 373.39 | 186.72 |
| 570 | 1°08.4′ | 3°14.94′ | 284.97 | 2.69 | 569.82 | 10.77 | 569.92 | 380.06 | 190.06 |
| 580 | 1°09.6′ | 3°21.84′ | 289.97 | 2.84 | 579.80 | 11.35 | 579.91 | 386.74 | 193.40 |
| 590 | 1°10.8′ | 3°28.86′ | 294.96 | 2.99 | 589.78 | 11.95 | 589.90 | 393.41 | 196.74 |
| 600 | 1°12.0′ | 3°36.00′ | 299.96 | 3.14 | 599.76 | 12.56 | 599.89 | 400.08 | 200.08 |
| 610 | 1°13.2′ | 3°43.26′ | 304.96 | 3.30 | 609.74 | 13.20 | 609.89 | 406.76 | 203.42 |
| 620 | 1°14.4′ | 3°50.64′ | 309.95 | 3.47 | 619.72 | 13.86 | 619.88 | 413.43 | 206.76 |
| 630 | 1°15.6′ | 3°58.14′ | 314.95 | 3.64 | 629.70 | 14.54 | 629.87 | 420.11 | 210.10 |
| 640 | 1°16.8′ | 4°05.76′ | 319.95 | 3.81 | 639.67 | 15.25 | 639.85 | 426.78 | 213.44 |
| 650 | 1°18.0′ | 4°13.50′ | 324.94 | 3.99 | 649.65 | 15.97 | 649.84 | 433.46 | 216.78 |
| 660 | 1°19.2′ | 4°21.36′ | 329.94 | 4.18 | 659.62 | 16.72 | 659.83 | 440.13 | 220.12 |
| 670 | 1°20.4′ | 4°29.34′ | 334.93 | 4.37 | 669.59 | 17.49 | 669.82 | 446.81 | 223.46 |
| 680 | 1°21.6′ | 4°37.44′ | 339.93 | 4.57 | 679.56 | 18.28 | 679.80 | 453.49 | 226.81 |
| 690 | 1°22.8′ | 4°45.66′ | 344.92 | 4.78 | 689.52 | 19.10 | 689.79 | 460.17 | 230.15 |
| 700 | 1°24.0′ | 4°54.00′ | 349.91 | 4.99 | 699.49 | 19.94 | 699.77 | 466.85 | 233.50 |
| 710 | 1°25.2′ | 5°02.46′ | 354.91 | 5.20 | 709.45 | 20.81 | 709.76 | 473.53 | 236.84 |
| 720 | 1°26.4′ | 5°11.04′ | 359.90 | 5.43 | 719.41 | 21.70 | 719.74 | 480.21 | 240.19 |
| 730 | 1°27.6′ | 5°19.74′ | 364.89 | 5.66 | 729.37 | 22.62 | 729.72 | 486.89 | 243.53 |
| 740 | 1°28.8′ | 5°28.56′ | 369.89 | 5.89 | 739.32 | 23.56 | 739.70 | 493.57 | 246.88 |
| 750 | 1°30.0′ | 5°37.50′ | 374.88 | 6.13 | 749.28 | 24.53 | 749.68 | 500.25 | 250.23 |
| 760 | 1°31.2′ | 5°46.56′ | 379.87 | 6.38 | 759.23 | 25.52 | 759.66 | 506.94 | 253.58 |
| 770 | 1°32.4′ | 5°55.74′ | 384.86 | 6.64 | 769.18 | 26.54 | 769.63 | 513.62 | 256.93 |
| 780 | 1°33.6′ | 6°05.04′ | 389.85 | 6.90 | 779.12 | 27.59 | 779.61 | 520.31 | 260.28 |
| 790 | 1°34.8′ | 6°14.46′ | 394.84 | 7.17 | 789.06 | 28.66 | 789.58 | 526.99 | 263.63 |
| 800 | 1°36.0′ | 6°24.00′ | 399.83 | 7.44 | 799.00 | 29.76 | 799.56 | 533.68 | 266.98 |
| 810 | 1°37.2′ | 6°33.66′ | 404.82 | 7.73 | 808.94 | 30.89 | 809.53 | 540.37 | 270.34 |
| 820 | 1°38.4′ | 6°43.44′ | 409.81 | 8.02 | 818.87 | 32.05 | 819.50 | 547.06 | 273.69 |
| 830 | 1°39.6′ | 6°53.34′ | 414.80 | 8.31 | 828.80 | 33.23 | 829.47 | 553.75 | 277.05 |
| 840 | 1°40.8′ | 7°03.36′ | 419.79 | 8.62 | 838.73 | 34.44 | 839.43 | 560.45 | 280.41 |
| 850 | 1°42.0′ | 7°13.50′ | 424.77 | 8.93 | 848.65 | 35.69 | 849.40 | 567.14 | 283.76 |
| 860 | 1°43.2′ | 7°23.76′ | 429.76 | 9.25 | 858.57 | 36.96 | 859.36 | 573.83 | 287.12 |
| 870 | 1°44.4′ | 7°34.14′ | 434.75 | 9.57 | 868.48 | 38.26 | 869.33 | 580.53 | 290.48 |
| 880 | 1°45.6′ | 7°44.64′ | 439.73 | 9.91 | 878.39 | 39.59 | 879.29 | 587.23 | 293.84 |
| 890 | 1°46.8′ | 7°55.26′ | 444.72 | 10.25 | 888.30 | 40.96 | 889.24 | 593.93 | 297.21 |
| 900 | 1°48.0′ | 8°06.00′ | 449.70 | 10.60 | 898.20 | 42.35 | 899.20 | 600.63 | 300.57 |
| 910 | 1°49.2′ | 8°16.86′ | 454.68 | 10.95 | 908.10 | 43.78 | 909.16 | 607.33 | 303.94 |
| 920 | 1°50.4′ | 8°27.84′ | 459.67 | 11.32 | 917.99 | 45.23 | 919.11 | 614.04 | 307.31 |
| 930 | 1°51.6′ | 8°38.94′ | 464.65 | 11.69 | 927.88 | 46.72 | 929.06 | 620.74 | 310.67 |
| 940 | 1°52.8′ | 8°50.16′ | 469.63 | 12.07 | 937.77 | 48.24 | 939.01 | 627.45 | 314.04 |
| 950 | 1°54.0′ | 9°01.50′ | 474.61 | 12.46 | 947.65 | 49.79 | 948.95 | 634.16 | 317.42 |
| 960 | 1°55.2′ | 9°12.96′ | 479.59 | 12.86 | 957.52 | 51.38 | 958.90 | 640.87 | 320.79 |
| 970 | 1°56.4′ | 9°24.54′ | 484.56 | 13.26 | 967.39 | 52.99 | 968.84 | 647.58 | 324.17 |
| 980 | 1°57.6′ | 9°36.24′ | 489.54 | 13.68 | 977.25 | 54.65 | 978.78 | 654.30 | 327.54 |
| 990 | 1°58.8′ | 9°48.06′ | 494.52 | 14.10 | 987.11 | 56.33 | 988.71 | 661.01 | 330.92 |
| 1000 | 2°00.0′ | 10°00.00′ | 499.49 | 14.53 | 996.96 | 58.05 | 998.65 | 667.73 | 334.30 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.25

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°01.5′ | 0°00.08′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°03.0′ | 0°00.30′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°04.5′ | 0°00.68′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°06.0′ | 0°01.20′ | 20.00 | 0.00 | 40.00 | 0.00 | 40.00 | 26.67 | 13.33 |
| 50 | 0°07.5′ | 0°01.88′ | 25.00 | 0.00 | 50.00 | 0.01 | 50.00 | 33.33 | 16.67 |
| 60 | 0°09.0′ | 0°02.70′ | 30.00 | 0.00 | 60.00 | 0.02 | 60.00 | 40.00 | 20.00 |
| 70 | 0°10.5′ | 0°03.68′ | 35.00 | 0.01 | 70.00 | 0.02 | 70.00 | 46.67 | 23.33 |
| 80 | 0°12.0′ | 0°04.80′ | 40.00 | 0.01 | 80.00 | 0.04 | 80.00 | 53.33 | 26.67 |
| 90 | 0°13.5′ | 0°06.08′ | 45.00 | 0.01 | 90.00 | 0.05 | 90.00 | 60.00 | 30.00 |
| 100 | 0°15.0′ | 0°07.50′ | 50.00 | 0.02 | 100.00 | 0.07 | 100.00 | 66.67 | 33.33 |
| 110 | 0°16.5′ | 0°09.08′ | 55.00 | 0.02 | 110.00 | 0.10 | 110.00 | 73.33 | 36.67 |
| 120 | 0°18.0′ | 0°10.80′ | 60.00 | 0.03 | 120.00 | 0.13 | 120.00 | 80.00 | 40.00 |
| 130 | 0°19.5′ | 0°12.68′ | 65.00 | 0.04 | 130.00 | 0.16 | 130.00 | 86.67 | 43.33 |
| 140 | 0°21.0′ | 0°14.70′ | 70.00 | 0.05 | 140.00 | 0.20 | 140.00 | 93.33 | 46.67 |
| 150 | 0°22.5′ | 0°16.88′ | 75.00 | 0.06 | 150.00 | 0.25 | 150.00 | 100.00 | 50.00 |
| 160 | 0°24.0′ | 0°19.20′ | 80.00 | 0.07 | 160.00 | 0.30 | 160.00 | 106.67 | 53.33 |
| 170 | 0°25.5′ | 0°21.68′ | 85.00 | 0.09 | 170.00 | 0.36 | 170.00 | 113.33 | 56.67 |
| 180 | 0°27.0′ | 0°24.30′ | 90.00 | 0.11 | 180.00 | 0.42 | 180.00 | 120.00 | 60.00 |
| 190 | 0°28.5′ | 0°27.08′ | 95.00 | 0.12 | 190.00 | 0.50 | 190.00 | 126.67 | 63.33 |
| 200 | 0°30.0′ | 0°30.00′ | 100.00 | 0.15 | 200.00 | 0.58 | 200.00 | 133.33 | 66.67 |
| 210 | 0°31.5′ | 0°33.08′ | 105.00 | 0.17 | 210.00 | 0.67 | 210.00 | 140.00 | 70.00 |
| 220 | 0°33.0′ | 0°36.30′ | 110.00 | 0.19 | 220.00 | 0.77 | 220.00 | 146.67 | 73.33 |
| 230 | 0°34.5′ | 0°39.68′ | 115.00 | 0.22 | 230.00 | 0.88 | 230.00 | 153.33 | 76.67 |
| 240 | 0°36.0′ | 0°43.20′ | 120.00 | 0.25 | 240.00 | 1.01 | 240.00 | 160.00 | 80.00 |
| 250 | 0°37.5′ | 0°46.88′ | 125.00 | 0.28 | 250.00 | 1.14 | 250.00 | 166.67 | 83.33 |
| 260 | 0°39.0′ | 0°50.70′ | 130.00 | 0.32 | 259.99 | 1.28 | 260.00 | 173.34 | 86.67 |
| 270 | 0°40.5′ | 0°54.68′ | 135.00 | 0.36 | 269.99 | 1.43 | 270.00 | 180.00 | 90.00 |
| 280 | 0°42.0′ | 0°58.80′ | 140.00 | 0.40 | 279.99 | 1.60 | 280.00 | 186.67 | 93.34 |
| 290 | 0°43.5′ | 1°03.08′ | 145.00 | 0.44 | 289.99 | 1.77 | 290.00 | 193.34 | 96.67 |
| 300 | 0°45.0′ | 1°07.50′ | 150.00 | 0.49 | 299.99 | 1.96 | 299.99 | 200.00 | 100.00 |
| 310 | 0°46.5′ | 1°12.08′ | 155.00 | 0.54 | 309.99 | 2.17 | 309.99 | 206.67 | 103.34 |
| 320 | 0°48.0′ | 1°16.80′ | 160.00 | 0.60 | 319.98 | 2.38 | 319.99 | 213.34 | 106.67 |
| 330 | 0°49.5′ | 1°21.68′ | 165.00 | 0.65 | 329.98 | 2.61 | 329.99 | 220.01 | 110.01 |
| 340 | 0°51.0′ | 1°26.70′ | 170.00 | 0.71 | 339.98 | 2.86 | 339.99 | 226.67 | 113.34 |
| 350 | 0°52.5′ | 1°31.88′ | 175.00 | 0.78 | 349.97 | 3.12 | 349.99 | 233.34 | 116.67 |
| 360 | 0°54.0′ | 1°37.20′ | 180.00 | 0.85 | 359.97 | 3.39 | 359.99 | 240.01 | 120.01 |
| 370 | 0°55.5′ | 1°42.68′ | 184.99 | 0.92 | 369.97 | 3.68 | 369.99 | 246.68 | 123.34 |
| 380 | 0°57.0′ | 1°48.30′ | 189.99 | 1.00 | 379.96 | 3.99 | 379.98 | 253.35 | 126.68 |
| 390 | 0°58.5′ | 1°54.08′ | 194.99 | 1.08 | 389.96 | 4.31 | 389.98 | 260.01 | 130.01 |
| 400 | 1°00.0′ | 2°00.00′ | 199.99 | 1.16 | 399.95 | 4.65 | 399.98 | 266.68 | 133.35 |
| 410 | 1°01.5′ | 2°06.08′ | 204.99 | 1.25 | 409.94 | 5.01 | 409.98 | 273.35 | 136.68 |
| 420 | 1°03.0′ | 2°12.30′ | 209.99 | 1.35 | 419.94 | 5.39 | 419.97 | 280.02 | 140.02 |
| 430 | 1°04.5′ | 2°18.68′ | 214.99 | 1.45 | 429.93 | 5.78 | 429.97 | 286.69 | 143.36 |
| 440 | 1°06.0′ | 2°25.20′ | 219.99 | 1.55 | 439.92 | 6.19 | 439.97 | 293.36 | 146.69 |
| 450 | 1°07.5′ | 2°31.88′ | 224.99 | 1.66 | 449.91 | 6.63 | 449.96 | 300.03 | 150.03 |
| 460 | 1°09.0′ | 2°38.70′ | 229.98 | 1.77 | 459.90 | 7.08 | 459.96 | 306.70 | 153.36 |
| 470 | 1°10.5′ | 2°45.68′ | 234.98 | 1.89 | 469.89 | 7.55 | 469.95 | 313.37 | 156.70 |
| 480 | 1°12.0′ | 2°52.80′ | 239.98 | 2.01 | 479.88 | 8.04 | 479.95 | 320.04 | 160.04 |
| 490 | 1°13.5′ | 3°00.08′ | 244.98 | 2.14 | 489.87 | 8.55 | 489.94 | 326.71 | 163.38 |
| 500 | 1°15.0′ | 3°07.50′ | 249.98 | 2.27 | 499.85 | 9.09 | 499.93 | 333.39 | 166.71 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.25—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 1°16.5′ | 3°15.08′ | 254.97 | 2.41 | 509.84 | 9.64 | 509.93 | 340.06 | 170.05 |
| 520 | 1°18.0′ | 3°22.80′ | 259.97 | 2.56 | 519.82 | 10.22 | 519.92 | 346.73 | 173.39 |
| 530 | 1°19.5′ | 3°30.68′ | 264.97 | 2.71 | 529.80 | 10.82 | 529.91 | 353.40 | 176.73 |
| 540 | 1°21.0′ | 3°38.70′ | 269.96 | 2.86 | 539.78 | 11.45 | 539.90 | 360.08 | 180.07 |
| 550 | 1°22.5′ | 3°46.88′ | 274.96 | 3.02 | 549.76 | 12.10 | 549.89 | 366.75 | 183.41 |
| 560 | 1°24.0′ | 3°55.20′ | 279.96 | 3.19 | 559.74 | 12.77 | 559.88 | 373.42 | 186.75 |
| 570 | 1°25.5′ | 4°03.68′ | 284.95 | 3.37 | 569.71 | 13.46 | 569.87 | 380.10 | 190.09 |
| 580 | 1°27.0′ | 4°12.30′ | 289.95 | 3.55 | 579.69 | 14.18 | 579.86 | 386.78 | 193.43 |
| 590 | 1°28.5′ | 4°21.08′ | 294.94 | 3.73 | 589.66 | 14.93 | 589.85 | 393.45 | 196.77 |
| 600 | 1°30.0′ | 4°30.00′ | 299.94 | 3.93 | 599.63 | 15.70 | 599.84 | 400.13 | 200.12 |
| 610 | 1°31.5′ | 4°39.08′ | 304.93 | 4.13 | 609.60 | 16.50 | 609.82 | 406.81 | 203.46 |
| 620 | 1°33.0′ | 4°48.30′ | 309.93 | 4.33 | 619.56 | 17.32 | 619.81 | 413.49 | 206.81 |
| 630 | 1°34.5′ | 4°57.68′ | 314.92 | 4.54 | 629.53 | 18.17 | 629.79 | 420.17 | 210.15 |
| 640 | 1°36.0′ | 5°07.20′ | 319.91 | 4.76 | 639.49 | 19.05 | 639.77 | 426.85 | 213.50 |
| 650 | 1°37.5′ | 5°16.88′ | 324.91 | 4.99 | 649.45 | 19.96 | 649.75 | 433.53 | 216.84 |
| 660 | 1°39.0′ | 5°26.70′ | 329.90 | 5.23 | 659.40 | 20.89 | 659.74 | 440.21 | 220.19 |
| 670 | 1°40.5′ | 5°36.68′ | 334.89 | 5.47 | 669.36 | 21.86 | 669.71 | 446.89 | 223.54 |
| 680 | 1°42.0′ | 5°46.80′ | 339.88 | 5.71 | 679.31 | 22.85 | 679.69 | 453.58 | 226.89 |
| 690 | 1°43.5′ | 5°57.08′ | 344.88 | 5.97 | 689.26 | 23.87 | 689.67 | 460.26 | 230.24 |
| 700 | 1°45.0′ | 6°07.50′ | 349.87 | 6.23 | 699.20 | 24.92 | 699.64 | 466.95 | 233.59 |
| 710 | 1°46.5′ | 6°18.08′ | 354.86 | 6.50 | 709.14 | 26.01 | 709.62 | 473.63 | 236.94 |
| 720 | 1°48.0′ | 6°28.80′ | 359.85 | 6.78 | 719.08 | 27.12 | 719.59 | 480.32 | 240.29 |
| 730 | 1°49.5′ | 6°39.68′ | 364.84 | 7.07 | 729.01 | 28.26 | 729.56 | 487.01 | 243.65 |
| 740 | 1°51.0′ | 6°50.70′ | 369.82 | 7.36 | 738.94 | 29.44 | 739.53 | 493.70 | 247.00 |
| 750 | 1°52.5′ | 7°01.88′ | 374.81 | 7.67 | 748.87 | 30.65 | 749.50 | 500.39 | 250.36 |
| 760 | 1°54.0′ | 7°13.20′ | 379.80 | 7.98 | 758.79 | 31.89 | 759.46 | 507.09 | 253.72 |
| 770 | 1°55.5′ | 7°24.68′ | 384.79 | 8.30 | 768.71 | 33.16 | 769.43 | 513.78 | 257.08 |
| 780 | 1°57.0′ | 7°36.30′ | 389.77 | 8.62 | 778.63 | 34.47 | 779.39 | 520.48 | 260.44 |
| 790 | 1°58.5′ | 7°48.08′ | 394.76 | 8.96 | 788.54 | 35.81 | 789.35 | 527.18 | 263.80 |
| 800 | 2°00.0′ | 8°00.00′ | 399.74 | 9.30 | 798.44 | 37.18 | 799.31 | 533.88 | 267.16 |
| 810 | 2°01.5′ | 8°12.08′ | 404.72 | 9.65 | 808.34 | 38.59 | 809.26 | 540.58 | 270.53 |
| 820 | 2°03.0′ | 8°24.30′ | 409.71 | 10.02 | 818.24 | 40.04 | 819.22 | 547.28 | 273.89 |
| 830 | 2°04.5′ | 8°36.68′ | 414.69 | 10.39 | 828.13 | 41.51 | 829.17 | 553.99 | 277.26 |
| 840 | 2°06.0′ | 8°49.20′ | 419.67 | 10.77 | 838.01 | 43.03 | 839.12 | 560.70 | 280.63 |
| 850 | 2°07.5′ | 9°01.88′ | 424.65 | 11.16 | 847.89 | 44.58 | 849.06 | 567.41 | 284.01 |
| 860 | 2°09.0′ | 9°14.70′ | 429.63 | 11.55 | 857.76 | 46.17 | 859.01 | 574.12 | 287.38 |
| 870 | 2°10.5′ | 9°27.68′ | 434.60 | 11.96 | 867.63 | 47.79 | 868.95 | 580.83 | 290.76 |
| 880 | 2°12.0′ | 9°40.80′ | 439.58 | 12.38 | 877.49 | 49.46 | 878.88 | 587.55 | 294.13 |
| 890 | 2°13.5′ | 9°54.08′ | 444.56 | 12.80 | 887.35 | 51.16 | 888.82 | 594.26 | 297.51 |
| 900 | 2°15.0′ | 10°07.50′ | 449.53 | 13.24 | 897.19 | 52.90 | 898.75 | 600.98 | 300.90 |
| 910 | 2°16.5′ | 10°21.08′ | 454.51 | 13.68 | 907.03 | 54.67 | 908.68 | 607.71 | 304.28 |
| 920 | 2°18.0′ | 10°34.80′ | 459.48 | 14.14 | 916.87 | 56.49 | 918.61 | 614.43 | 307.67 |
| 930 | 2°19.5′ | 10°48.68′ | 464.45 | 14.61 | 926.69 | 58.35 | 928.53 | 621.16 | 311.06 |
| 940 | 2°21.0′ | 11°02.70′ | 469.42 | 15.08 | 936.51 | 60.24 | 938.45 | 627.89 | 314.45 |
| 950 | 2°22.5′ | 11°16.88′ | 474.39 | 15.57 | 946.32 | 62.18 | 948.36 | 634.62 | 317.84 |
| 960 | 2°24.0′ | 11°31.20′ | 479.35 | 16.06 | 956.13 | 64.15 | 958.28 | 641.36 | 321.24 |
| 970 | 2°25.5′ | 11°45.68′ | 484.32 | 16.57 | 965.92 | 66.17 | 968.18 | 648.10 | 324.64 |
| 980 | 2°27.0′ | 12°00.30′ | 489.28 | 17.08 | 975.71 | 68.23 | 978.09 | 654.84 | 328.04 |
| 990 | 2°28.5′ | 12°15.08′ | 494.25 | 17.61 | 985.48 | 70.33 | 987.99 | 661.59 | 331.44 |
| 1000 | 2°30.0′ | 12°30.00′ | 499.21 | 18.15 | 995.25 | 72.48 | 997.89 | 668.34 | 334.85 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.3

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°01.8′ | 0°00.09′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°03.6′ | 0°00.36′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°05.4′ | 0°00.81′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°07.2′ | 0°01.44′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°09.0′ | 0°02.25′ | 25.00 | 0.00 | 50.00 | 0.01 | 50.00 | 33.33 | 16.67 |
| 60 | 0°10.8′ | 0°03.24′ | 30.00 | 0.00 | 60.00 | 0.02 | 60.00 | 40.00 | 20.00 |
| 70 | 0°12.6′ | 0°04.41′ | 35.00 | 0.01 | 70.00 | 0.03 | 70.00 | 46.67 | 23.33 |
| 80 | 0°14.4′ | 0°05.76′ | 40.00 | 0.01 | 80.00 | 0.04 | 80.00 | 53.33 | 26.67 |
| 90 | 0°16.2′ | 0°07.29′ | 45.00 | 0.02 | 90.00 | 0.06 | 90.00 | 60.00 | 30.00 |
| 100 | 0°18.0′ | 0°09.00′ | 50.00 | 0.02 | 100.00 | 0.09 | 100.00 | 66.67 | 33.33 |
| 110 | 0°19.8′ | 0°10.89′ | 55.00 | 0.03 | 110.00 | 0.12 | 110.00 | 73.33 | 36.67 |
| 120 | 0°21.6′ | 0°12.96′ | 60.00 | 0.04 | 120.00 | 0.15 | 120.00 | 80.00 | 40.00 |
| 130 | 0°23.4′ | 0°15.21′ | 65.00 | 0.05 | 130.00 | 0.19 | 130.00 | 86.67 | 43.33 |
| 140 | 0°25.2′ | 0°17.64′ | 70.00 | 0.06 | 140.00 | 0.24 | 140.00 | 93.33 | 46.67 |
| 150 | 0°27.0′ | 0°20.25′ | 75.00 | 0.07 | 150.00 | 0.29 | 150.00 | 100.00 | 50.00 |
| 160 | 0°28.8′ | 0°23.04′ | 80.00 | 0.09 | 160.00 | 0.36 | 160.00 | 106.67 | 53.33 |
| 170 | 0°30.6′ | 0°26.01′ | 85.00 | 0.11 | 170.00 | 0.43 | 170.00 | 113.33 | 56.67 |
| 180 | 0°32.4′ | 0°29.16′ | 90.00 | 0.13 | 180.00 | 0.51 | 180.00 | 120.00 | 60.00 |
| 190 | 0°34.2′ | 0°32.49′ | 95.00 | 0.15 | 190.00 | 0.60 | 190.00 | 126.67 | 63.33 |
| 200 | 0°36.0′ | 0°36.00′ | 100.00 | 0.17 | 200.00 | 0.70 | 200.00 | 133.33 | 66.67 |
| 210 | 0°37.8′ | 0°39.69′ | 105.00 | 0.20 | 210.00 | 0.81 | 210.00 | 140.00 | 70.00 |
| 220 | 0°39.6′ | 0°43.56′ | 110.00 | 0.23 | 220.00 | 0.93 | 220.00 | 146.67 | 73.33 |
| 230 | 0°41.4′ | 0°47.61′ | 115.00 | 0.27 | 230.00 | 1.06 | 230.00 | 153.33 | 76.67 |
| 240 | 0°43.2′ | 0°51.84′ | 120.00 | 0.30 | 239.99 | 1.21 | 240.00 | 160.00 | 80.00 |
| 250 | 0°45.0′ | 0°56.25′ | 125.00 | 0.34 | 249.99 | 1.36 | 250.00 | 166.67 | 83.34 |
| 260 | 0°46.8′ | 1°00.84′ | 130.00 | 0.38 | 259.99 | 1.53 | 260.00 | 173.34 | 86.67 |
| 270 | 0°48.6′ | 1°05.61′ | 135.00 | 0.43 | 269.99 | 1.72 | 270.00 | 180.00 | 90.00 |
| 280 | 0°50.4′ | 1°10.56′ | 140.00 | 0.48 | 279.99 | 1.92 | 279.99 | 186.67 | 93.34 |
| 290 | 0°52.2′ | 1°15.69′ | 145.00 | 0.53 | 289.99 | 2.13 | 289.99 | 193.34 | 96.67 |
| 300 | 0°54.0′ | 1°21.00′ | 150.00 | 0.59 | 299.98 | 2.36 | 299.99 | 200.01 | 100.01 |
| 310 | 0°55.8′ | 1°26.49′ | 155.00 | 0.65 | 309.98 | 2.60 | 309.99 | 206.67 | 103.34 |
| 320 | 0°57.6′ | 1°32.16′ | 160.00 | 0.71 | 319.98 | 2.86 | 319.99 | 213.34 | 106.67 |
| 330 | 0°59.4′ | 1°38.01′ | 165.00 | 0.78 | 329.97 | 3.14 | 329.99 | 220.01 | 110.01 |
| 340 | 1°01.2′ | 1°44.04′ | 169.99 | 0.86 | 339.97 | 3.43 | 339.99 | 226.68 | 113.34 |
| 350 | 1°03.0′ | 1°50.25′ | 174.99 | 0.94 | 349.96 | 3.74 | 349.98 | 233.35 | 116.68 |
| 360 | 1°04.8′ | 1°56.64′ | 179.99 | 1.02 | 359.96 | 4.07 | 359.98 | 240.01 | 120.01 |
| 370 | 1°06.6′ | 2°03.21′ | 184.99 | 1.11 | 369.95 | 4.42 | 369.98 | 246.68 | 123.35 |
| 380 | 1°08.4′ | 2°09.96′ | 189.99 | 1.20 | 379.95 | 4.79 | 379.98 | 253.35 | 126.68 |
| 390 | 1°10.2′ | 2°16.89′ | 194.99 | 1.29 | 389.94 | 5.18 | 389.97 | 260.02 | 130.02 |
| 400 | 1°12.0′ | 2°24.00′ | 199.99 | 1.40 | 399.93 | 5.58 | 399.97 | 266.69 | 133.36 |
| 410 | 1°13.8′ | 2°31.29′ | 204.99 | 1.50 | 409.92 | 6.01 | 409.96 | 273.36 | 136.69 |
| 420 | 1°15.6′ | 2°38.76′ | 209.99 | 1.62 | 419.91 | 6.46 | 419.96 | 280.03 | 140.03 |
| 430 | 1°17.4′ | 2°46.41′ | 214.98 | 1.73 | 429.90 | 6.94 | 429.96 | 286.70 | 143.37 |
| 440 | 1°19.2′ | 2°54.24′ | 219.98 | 1.86 | 439.89 | 7.43 | 439.95 | 293.37 | 146.70 |
| 450 | 1°21.0′ | 3°02.25′ | 224.98 | 1.99 | 449.87 | 7.95 | 449.94 | 300.04 | 150.04 |
| 460 | 1°22.8′ | 3°10.44′ | 229.98 | 2.12 | 459.86 | 8.49 | 459.94 | 306.72 | 153.38 |
| 470 | 1°24.6′ | 3°18.81′ | 234.97 | 2.26 | 469.84 | 9.06 | 469.93 | 313.39 | 156.72 |
| 480 | 1°26.4′ | 3°27.36′ | 239.97 | 2.41 | 479.83 | 9.65 | 479.92 | 320.06 | 160.06 |
| 490 | 1°28.2′ | 3°36.09′ | 244.97 | 2.57 | 489.81 | 10.26 | 489.91 | 326.73 | 163.39 |
| 500 | 1°30.0′ | 3°45.00′ | 249.96 | 2.73 | 499.79 | 10.90 | 499.90 | 333.41 | 166.73 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.3—Continued

| L | D | S | q | p | x | y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 1°31.8′ | 3°54.09′ | 254.96 | 2.89 | 509.76 | 11.57 | 509.89 | 340.08 | 170.08 |
| 520 | 1°33.6′ | 4°03.36′ | 259.96 | 3.07 | 519.74 | 12.27 | 519.88 | 346.76 | 173.42 |
| 530 | 1°35.4′ | 4°12.81′ | 264.95 | 3.25 | 529.71 | 12.99 | 529.87 | 353.43 | 176.76 |
| 540 | 1°37.2′ | 4°22.44′ | 269.95 | 3.43 | 539.69 | 13.74 | 539.86 | 360.11 | 180.10 |
| 550 | 1°39.0′ | 4°32.25′ | 274.94 | 3.63 | 549.66 | 14.51 | 549.85 | 366.79 | 183.44 |
| 560 | 1°40.8′ | 4°42.24′ | 279.94 | 3.83 | 559.62 | 15.32 | 559.83 | 373.47 | 186.79 |
| 570 | 1°42.6′ | 4°52.41′ | 284.93 | 4.04 | 569.59 | 16.15 | 569.82 | 380.14 | 190.13 |
| 580 | 1°44.4′ | 5°02.76′ | 289.93 | 4.26 | 579.55 | 17.02 | 579.80 | 386.82 | 193.48 |
| 590 | 1°46.2′ | 5°13.29′ | 294.92 | 4.48 | 589.51 | 17.91 | 589.78 | 393.50 | 196.82 |
| 600 | 1°48.0′ | 5°24.00′ | 299.91 | 4.71 | 599.47 | 18.84 | 599.76 | 400.19 | 200.17 |
| 610 | 1°49.8′ | 5°34.89′ | 304.90 | 4.95 | 609.42 | 19.79 | 609.74 | 406.87 | 203.52 |
| 620 | 1°51.6′ | 5°45.96′ | 309.90 | 5.20 | 619.37 | 20.78 | 619.72 | 413.55 | 206.87 |
| 630 | 1°53.4′ | 5°57.21′ | 314.89 | 5.45 | 629.32 | 21.80 | 629.70 | 420.24 | 210.22 |
| 640 | 1°55.2′ | 6°08.64′ | 319.88 | 5.72 | 639.26 | 22.86 | 639.67 | 426.92 | 213.57 |
| 650 | 1°57.0′ | 6°20.25′ | 324.87 | 5.99 | 649.21 | 23.94 | 649.65 | 433.61 | 216.92 |
| 660 | 1°58.8′ | 6°32.04′ | 329.86 | 6.27 | 659.14 | 25.07 | 659.62 | 440.30 | 220.27 |
| 670 | 2°00.6′ | 6°44.01′ | 334.85 | 6.56 | 669.08 | 26.22 | 669.59 | 446.99 | 223.63 |
| 680 | 2°02.4′ | 6°56.16′ | 339.83 | 6.86 | 679.00 | 27.41 | 679.56 | 453.68 | 226.98 |
| 690 | 2°04.2′ | 7°08.49′ | 344.82 | 7.16 | 688.93 | 28.64 | 689.52 | 460.37 | 230.34 |
| 700 | 2°06.0′ | 7°21.00′ | 349.81 | 7.48 | 698.85 | 29.90 | 699.49 | 467.07 | 233.70 |
| 710 | 2°07.8′ | 7°33.69′ | 354.79 | 7.80 | 708.76 | 31.19 | 709.45 | 473.77 | 237.06 |
| 720 | 2°09.6′ | 7°46.56′ | 359.78 | 8.14 | 718.67 | 32.53 | 719.41 | 480.46 | 240.42 |
| 730 | 2°11.4′ | 7°59.61′ | 364.76 | 8.48 | 728.58 | 33.90 | 729.37 | 487.16 | 243.79 |
| 740 | 2°13.2′ | 8°12.84′ | 369.75 | 8.83 | 738.48 | 35.31 | 739.32 | 493.87 | 247.15 |
| 750 | 2°15.0′ | 8°26.25′ | 374.73 | 9.20 | 748.38 | 36.76 | 749.28 | 500.57 | 250.52 |
| 760 | 2°16.8′ | 8°39.84′ | 379.71 | 9.57 | 758.26 | 38.25 | 759.23 | 507.27 | 253.89 |
| 770 | 2°18.6′ | 8°53.61′ | 384.69 | 9.95 | 768.15 | 39.77 | 769.18 | 513.98 | 257.26 |
| 780 | 2°20.4′ | 9°07.56′ | 389.67 | 10.34 | 778.02 | 41.34 | 779.12 | 520.69 | 260.63 |
| 790 | 2°22.2′ | 9°21.69′ | 394.65 | 10.75 | 787.89 | 42.94 | 789.06 | 527.41 | 264.00 |
| 800 | 2°24.0′ | 9°36.00′ | 399.63 | 11.16 | 797.76 | 44.59 | 799.00 | 534.12 | 267.38 |
| 810 | 2°25.8′ | 9°50.49′ | 404.60 | 11.58 | 807.61 | 46.28 | 808.94 | 540.84 | 270.76 |
| 820 | 2°27.6′ | 10°05.16′ | 409.58 | 12.02 | 817.46 | 48.01 | 818.87 | 547.56 | 274.14 |
| 830 | 2°29.4′ | 10°20.01′ | 414.55 | 12.46 | 827.30 | 49.78 | 828.80 | 554.28 | 277.53 |
| 840 | 2°31.2′ | 10°35.04′ | 419.52 | 12.92 | 837.14 | 51.60 | 838.73 | 561.00 | 280.91 |
| 850 | 2°33.0′ | 10°50.25′ | 424.49 | 13.38 | 846.96 | 53.46 | 848.65 | 567.73 | 284.30 |
| 860 | 2°34.8′ | 11°05.64′ | 429.46 | 13.86 | 856.78 | 55.36 | 858.57 | 574.46 | 287.69 |
| 870 | 2°36.6′ | 11°21.21′ | 434.43 | 14.35 | 866.59 | 57.30 | 868.48 | 581.20 | 291.09 |
| 880 | 2°38.4′ | 11°36.96′ | 439.40 | 14.85 | 876.39 | 59.30 | 878.39 | 587.93 | 294.49 |
| 890 | 2°40.2′ | 11°52.89′ | 444.36 | 15.36 | 886.18 | 61.33 | 888.30 | 594.68 | 297.89 |
| 900 | 2°42.0′ | 12°09.00′ | 449.33 | 15.88 | 895.96 | 63.41 | 898.20 | 601.42 | 301.29 |
| 910 | 2°43.8′ | 12°25.29′ | 454.29 | 16.41 | 905.73 | 65.54 | 908.10 | 608.17 | 304.70 |
| 920 | 2°45.6′ | 12°41.76′ | 459.25 | 16.96 | 915.49 | 67.72 | 917.99 | 614.92 | 308.11 |
| 930 | 2°47.4′ | 12°58.41′ | 464.21 | 17.52 | 925.24 | 69.94 | 927.88 | 621.67 | 311.52 |
| 940 | 2°49.2′ | 13°15.24′ | 469.16 | 18.09 | 934.98 | 72.21 | 937.77 | 628.43 | 314.94 |
| 950 | 2°51.0′ | 13°32.25′ | 474.12 | 18.67 | 944.71 | 74.52 | 947.64 | 635.20 | 318.36 |
| 960 | 2°52.8′ | 13°49.44′ | 479.07 | 19.26 | 954.43 | 76.89 | 957.52 | 641.96 | 321.78 |
| 970 | 2°54.6′ | 14°06.81′ | 484.02 | 19.87 | 964.13 | 79.30 | 967.39 | 648.73 | 325.21 |
| 980 | 2°56.4′ | 14°24.36′ | 488.97 | 20.49 | 973.82 | 81.76 | 977.25 | 655.51 | 328.65 |
| 990 | 2°58.2′ | 14°42.09′ | 493.92 | 21.12 | 983.50 | 84.28 | 987.11 | 662.29 | 332.08 |
| 1000 | 3°00.0′ | 15°00.00′ | 498.86 | 21.76 | 993.17 | 86.84 | 996.96 | 669.08 | 335.52 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.4

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°02.4′ | 0°00.12′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°04.8′ | 0°00.48′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°07.2′ | 0°01.08′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°09.6′ | 0°01.92′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°12.0′ | 0°03.00′ | 25.00 | 0.00 | 50.00 | 0.01 | 50.00 | 33.33 | 16.67 |
| 60 | 0°14.4′ | 0°04.32′ | 30.00 | 0.01 | 60.00 | 0.03 | 60.00 | 40.00 | 20.00 |
| 70 | 0°16.8′ | 0°05.88′ | 35.00 | 0.01 | 70.00 | 0.04 | 70.00 | 46.67 | 23.33 |
| 80 | 0°19.2′ | 0°07.68′ | 40.00 | 0.01 | 80.00 | 0.06 | 80.00 | 53.33 | 26.67 |
| 90 | 0°21.6′ | 0°09.72′ | 45.00 | 0.02 | 90.00 | 0.08 | 90.00 | 60.00 | 30.00 |
| 100 | 0°24.0′ | 0°12.00′ | 50.00 | 0.03 | 100.00 | 0.12 | 100.00 | 66.67 | 33.33 |
| 110 | 0°26.4′ | 0°14.52′ | 55.00 | 0.04 | 110.00 | 0.15 | 110.00 | 73.33 | 36.67 |
| 120 | 0°28.8′ | 0°17.28′ | 60.00 | 0.05 | 120.00 | 0.20 | 120.00 | 80.00 | 40.00 |
| 130 | 0°31.2′ | 0°20.28′ | 65.00 | 0.06 | 130.00 | 0.26 | 130.00 | 86.67 | 43.33 |
| 140 | 0°33.6′ | 0°23.52′ | 70.00 | 0.08 | 140.00 | 0.32 | 140.00 | 93.33 | 46.67 |
| 150 | 0°36.0′ | 0°27.00′ | 75.00 | 0.10 | 150.00 | 0.39 | 150.00 | 100.00 | 50.00 |
| 160 | 0°38.4′ | 0°30.72′ | 80.00 | 0.12 | 160.00 | 0.48 | 160.00 | 106.67 | 53.33 |
| 170 | 0°40.8′ | 0°34.68′ | 85.00 | 0.14 | 170.00 | 0.57 | 170.00 | 113.33 | 56.67 |
| 180 | 0°43.2′ | 0°38.88′ | 90.00 | 0.17 | 180.00 | 0.68 | 180.00 | 120.00 | 60.00 |
| 190 | 0°45.6′ | 0°43.32′ | 95.00 | 0.20 | 190.00 | 0.80 | 190.00 | 126.67 | 63.33 |
| 200 | 0°48.0′ | 0°48.00′ | 100.00 | 0.23 | 200.00 | 0.93 | 200.00 | 133.33 | 66.67 |
| 210 | 0°50.4′ | 0°52.92′ | 105.00 | 0.27 | 210.00 | 1.08 | 210.00 | 140.00 | 70.00 |
| 220 | 0°52.8′ | 0°58.08′ | 110.00 | 0.31 | 219.99 | 1.24 | 220.00 | 146.67 | 73.34 |
| 230 | 0°55.2′ | 1°03.48′ | 115.00 | 0.35 | 229.99 | 1.42 | 230.00 | 153.34 | 76.67 |
| 240 | 0°57.6′ | 1°09.12′ | 120.00 | 0.40 | 239.99 | 1.61 | 240.00 | 160.00 | 80.00 |
| 250 | 1°00.0′ | 1°15.00′ | 125.00 | 0.45 | 249.99 | 1.82 | 249.99 | 166.67 | 83.34 |
| 260 | 1°02.4′ | 1°21.12′ | 130.00 | 0.51 | 259.99 | 2.04 | 259.99 | 173.34 | 86.67 |
| 270 | 1°04.8′ | 1°27.48′ | 135.00 | 0.57 | 269.98 | 2.29 | 269.99 | 180.01 | 90.01 |
| 280 | 1°07.2′ | 1°34.08′ | 140.00 | 0.64 | 279.98 | 2.55 | 279.99 | 186.67 | 93.34 |
| 290 | 1°09.6′ | 1°40.92′ | 145.00 | 0.71 | 289.98 | 2.84 | 289.99 | 193.34 | 96.67 |
| 300 | 1°12.0′ | 1°48.00′ | 150.00 | 0.79 | 299.97 | 3.14 | 299.99 | 200.01 | 100.01 |
| 310 | 1°14.4′ | 1°55.32′ | 154.99 | 0.87 | 309.97 | 3.47 | 309.98 | 206.68 | 103.34 |
| 320 | 1°16.8′ | 2°02.88′ | 159.99 | 0.95 | 319.96 | 3.81 | 319.98 | 213.35 | 106.68 |
| 330 | 1°19.2′ | 2°10.68′ | 164.99 | 1.05 | 329.95 | 4.18 | 329.98 | 220.02 | 110.02 |
| 340 | 1°21.6′ | 2°18.72′ | 169.99 | 1.14 | 339.94 | 4.57 | 339.98 | 226.69 | 113.35 |
| 350 | 1°24.0′ | 2°27.00′ | 174.99 | 1.25 | 349.94 | 4.99 | 349.97 | 233.36 | 116.69 |
| 360 | 1°26.4′ | 2°35.52′ | 179.99 | 1.36 | 359.93 | 5.43 | 359.97 | 240.03 | 120.02 |
| 370 | 1°28.8′ | 2°44.28′ | 184.99 | 1.47 | 369.92 | 5.89 | 369.96 | 246.70 | 123.36 |
| 380 | 1°31.2′ | 2°53.28′ | 189.98 | 1.60 | 379.90 | 6.38 | 379.96 | 253.37 | 126.70 |
| 390 | 1°33.6′ | 3°02.52′ | 194.98 | 1.73 | 389.89 | 6.90 | 389.95 | 260.04 | 130.03 |
| 400 | 1°36.0′ | 3°12.00′ | 199.98 | 1.86 | 399.88 | 7.45 | 399.94 | 266.71 | 133.37 |
| 410 | 1°38.4′ | 3°21.72′ | 204.98 | 2.00 | 409.86 | 8.02 | 409.94 | 273.38 | 136.71 |
| 420 | 1°40.8′ | 3°31.68′ | 209.97 | 2.15 | 419.84 | 8.62 | 419.93 | 280.06 | 140.05 |
| 430 | 1°43.2′ | 3°41.88′ | 214.97 | 2.31 | 429.82 | 9.25 | 429.92 | 286.73 | 143.39 |
| 440 | 1°45.6′ | 3°52.32′ | 219.97 | 2.48 | 439.80 | 9.91 | 439.91 | 293.40 | 146.73 |
| 450 | 1°48.0′ | 4°03.00′ | 224.96 | 2.65 | 449.78 | 10.60 | 449.90 | 300.08 | 150.07 |
| 460 | 1°50.4′ | 4°13.92′ | 229.96 | 2.83 | 459.75 | 11.32 | 459.89 | 306.75 | 153.41 |
| 470 | 1°52.8′ | 4°25.08′ | 234.95 | 3.02 | 469.72 | 12.08 | 469.88 | 313.43 | 156.76 |
| 480 | 1°55.2′ | 4°36.48′ | 239.95 | 3.22 | 479.69 | 12.86 | 479.86 | 320.11 | 160.10 |
| 490 | 1°57.6′ | 4°48.12′ | 244.94 | 3.42 | 489.66 | 13.68 | 489.85 | 326.79 | 163.44 |
| 500 | 2°00.0′ | 5°00.00′ | 249.94 | 3.64 | 499.62 | 14.54 | 499.83 | 333.47 | 166.79 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.4—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 2°02.4′ | 5°12.12′ | 254.93 | 3.86 | 509.58 | 15.43 | 509.81 | 340.15 | 170.13 |
| 520 | 2°04.8′ | 5°24.48′ | 259.92 | 4.09 | 519.54 | 16.35 | 519.79 | 346.83 | 173.48 |
| 530 | 2°07.2′ | 5°37.08′ | 264.92 | 4.33 | 529.49 | 17.31 | 529.77 | 353.51 | 176.83 |
| 540 | 2°09.6′ | 5°49.92′ | 269.91 | 4.58 | 539.44 | 18.31 | 539.75 | 360.20 | 180.18 |
| 550 | 2°12.0′ | 6°03.00′ | 274.90 | 4.84 | 549.39 | 19.34 | 549.73 | 366.88 | 183.53 |
| 560 | 2°14.4′ | 6°16.32′ | 279.89 | 5.11 | 559.33 | 20.42 | 559.70 | 373.57 | 186.88 |
| 570 | 2°16.8′ | 6°29.88′ | 284.88 | 5.38 | 569.27 | 21.53 | 569.67 | 380.26 | 190.23 |
| 580 | 2°19.2′ | 6°43.68′ | 289.87 | 5.67 | 579.20 | 22.68 | 579.64 | 386.95 | 193.59 |
| 590 | 2°21.6′ | 6°57.72′ | 294.85 | 5.97 | 589.13 | 23.87 | 589.61 | 393.64 | 196.94 |
| 600 | 2°24.0′ | 7°12.00′ | 299.84 | 6.28 | 599.05 | 25.10 | 599.58 | 400.33 | 200.30 |
| 610 | 2°26.4′ | 7°26.52′ | 304.83 | 6.60 | 608.97 | 26.38 | 609.54 | 407.03 | 203.66 |
| 620 | 2°28.8′ | 7°41.28′ | 309.81 | 6.93 | 618.88 | 27.70 | 619.50 | 413.72 | 207.02 |
| 630 | 2°31.2′ | 7°56.28′ | 314.80 | 7.27 | 628.79 | 29.05 | 629.46 | 420.42 | 210.38 |
| 640 | 2°33.6′ | 8°11.52′ | 319.78 | 7.62 | 638.69 | 30.46 | 639.42 | 427.12 | 213.75 |
| 650 | 2°36.0′ | 8°27.00′ | 324.76 | 7.98 | 648.59 | 31.90 | 649.37 | 433.83 | 217.12 |
| 660 | 2°38.4′ | 8°42.72′ | 329.75 | 8.36 | 658.48 | 33.40 | 659.32 | 440.53 | 220.49 |
| 670 | 2°40.8′ | 8°58.68′ | 334.73 | 8.74 | 668.36 | 34.93 | 669.27 | 447.24 | 223.86 |
| 680 | 2°43.2′ | 9°14.88′ | 339.70 | 9.14 | 678.23 | 36.52 | 679.21 | 453.95 | 227.23 |
| 690 | 2°45.6′ | 9°31.32′ | 344.68 | 9.55 | 688.10 | 38.15 | 689.15 | 460.67 | 230.61 |
| 700 | 2°48.0′ | 9°48.00′ | 349.66 | 9.97 | 697.95 | 39.83 | 699.09 | 467.38 | 233.99 |
| 710 | 2°50.4′ | 10°04.92′ | 354.63 | 10.40 | 707.80 | 41.55 | 709.02 | 474.10 | 237.37 |
| 720 | 2°52.8′ | 10°22.08′ | 359.61 | 10.84 | 717.65 | 43.33 | 718.95 | 480.83 | 240.75 |
| 730 | 2°55.2′ | 10°39.48′ | 364.58 | 11.30 | 727.48 | 45.15 | 728.88 | 487.55 | 244.14 |
| 740 | 2°57.6′ | 10°57.12′ | 369.55 | 11.77 | 737.30 | 47.03 | 738.80 | 494.28 | 247.53 |
| 750 | 3°00.0′ | 11°15.00′ | 374.52 | 12.25 | 747.11 | 48.95 | 748.72 | 501.01 | 250.92 |
| 760 | 3°02.4′ | 11°33.12′ | 379.49 | 12.75 | 756.92 | 50.93 | 758.63 | 507.75 | 254.32 |
| 770 | 3°04.8′ | 11°51.48′ | 384.45 | 13.26 | 766.71 | 52.96 | 768.54 | 514.49 | 257.72 |
| 780 | 3°07.2′ | 12°10.08′ | 389.41 | 13.78 | 776.49 | 55.04 | 778.44 | 521.23 | 261.12 |
| 790 | 3°09.6′ | 12°28.92′ | 394.38 | 14.32 | 786.26 | 57.17 | 788.33 | 527.98 | 264.53 |
| 800 | 3°12.0′ | 12°48.00′ | 399.34 | 14.87 | 796.02 | 59.36 | 798.23 | 534.73 | 267.94 |
| 810 | 3°14.4′ | 13°07.32′ | 404.29 | 15.43 | 805.76 | 61.60 | 808.11 | 541.49 | 271.36 |
| 820 | 3°16.8′ | 13°26.88′ | 409.25 | 16.01 | 815.49 | 63.90 | 817.99 | 548.25 | 274.78 |
| 830 | 3°19.2′ | 13°46.68′ | 414.20 | 16.60 | 825.21 | 66.26 | 827.87 | 555.02 | 278.20 |
| 840 | 3°21.6′ | 14°06.72′ | 419.15 | 17.20 | 834.92 | 68.67 | 837.74 | 561.79 | 281.63 |
| 850 | 3°24.0′ | 14°27.00′ | 424.10 | 17.82 | 844.61 | 71.13 | 847.60 | 568.57 | 285.06 |
| 860 | 3°26.4′ | 14°47.52′ | 429.05 | 18.46 | 854.29 | 73.66 | 857.46 | 575.35 | 288.50 |
| 870 | 3°28.8′ | 15°08.28′ | 433.99 | 19.11 | 863.95 | 76.24 | 867.30 | 582.14 | 291.94 |
| 880 | 3°31.2′ | 15°29.28′ | 438.93 | 19.77 | 873.59 | 78.88 | 877.15 | 588.93 | 295.39 |
| 890 | 3°33.6′ | 15°50.52′ | 443.87 | 20.45 | 883.22 | 81.58 | 887.98 | 595.73 | 298.84 |
| 900 | 3°36.0′ | 16°12.00′ | 448.80 | 21.15 | 892.83 | 84.34 | 896.81 | 602.53 | 302.30 |
| 910 | 3°38.4′ | 16°33.72′ | 453.74 | 21.86 | 902.43 | 87.16 | 906.63 | 609.34 | 305.77 |
| 920 | 3°40.8′ | 16°55.68′ | 458.66 | 22.58 | 912.00 | 90.04 | 916.44 | 616.16 | 309.24 |
| 930 | 3°43.2′ | 17°17.88′ | 463.59 | 23.32 | 921.56 | 92.98 | 926.24 | 622.99 | 312.72 |
| 940 | 3°45.6′ | 17°40.32′ | 468.51 | 24.08 | 931.10 | 95.99 | 936.03 | 629.82 | 316.20 |
| 950 | 3°48.0′ | 18°03.00′ | 473.43 | 24.85 | 940.61 | 99.06 | 945.82 | 636.66 | 319.69 |
| 960 | 3°50.4′ | 18°25.92′ | 478.35 | 25.64 | 950.11 | 102.19 | 955.59 | 643.50 | 323.19 |
| 970 | 3°52.8′ | 18°49.08′ | 483.26 | 26.45 | 959.59 | 105.38 | 965.36 | 650.36 | 326.69 |
| 980 | 3°55.2′ | 19°12.48′ | 488.17 | 27.27 | 969.04 | 108.64 | 975.11 | 657.22 | 330.20 |
| 990 | 3°57.6′ | 19°36.12′ | 493.08 | 28.11 | 978.48 | 111.96 | 984.86 | 664.09 | 333.72 |
| 1000 | 4°00.0′ | 20°00.00′ | 497.98 | 28.96 | 987.88 | 115.35 | 994.60 | 670.97 | 337.25 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°03.0′ | 0°00.15′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°06.0′ | 0°00.60′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°09.0′ | 0°01.35′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°12.0′ | 0°02.40′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°15.0′ | 0°03.75′ | 25.00 | 0.00 | 50.00 | 0.02 | 50.00 | 33.33 | 16.67 |
| 60 | 0°18.0′ | 0°05.40′ | 30.00 | 0.01 | 60.00 | 0.03 | 60.00 | 40.00 | 20.00 |
| 70 | 0°21.0′ | 0°07.35′ | 35.00 | 0.01 | 70.00 | 0.05 | 70.00 | 46.67 | 23.33 |
| 80 | 0°24.0′ | 0°09.60′ | 40.00 | 0.02 | 80.00 | 0.07 | 80.00 | 53.33 | 26.67 |
| 90 | 0°27.0′ | 0°12.15′ | 45.00 | 0.03 | 90.00 | 0.11 | 90.00 | 60.00 | 30.00 |
| 100 | 0°30.0′ | 0°15.00′ | 50.00 | 0.04 | 100.00 | 0.15 | 100.00 | 66.67 | 33.33 |
| 110 | 0°33.0′ | 0°18.15′ | 55.00 | 0.05 | 110.00 | 0.19 | 110.00 | 73.33 | 36.67 |
| 120 | 0°36.0′ | 0°21.60′ | 60.00 | 0.06 | 120.00 | 0.25 | 120.00 | 80.00 | 40.00 |
| 130 | 0°39.0′ | 0°25.35′ | 65.00 | 0.08 | 130.00 | 0.32 | 130.00 | 86.67 | 43.33 |
| 140 | 0°42.0′ | 0°29.40′ | 70.00 | 0.10 | 140.00 | 0.40 | 140.00 | 93.33 | 46.67 |
| 150 | 0°45.0′ | 0°33.75′ | 75.00 | 0.12 | 150.00 | 0.49 | 150.00 | 100.00 | 50.00 |
| 160 | 0°48.0′ | 0°38.40′ | 80.00 | 0.15 | 160.00 | 0.60 | 160.00 | 106.67 | 53.33 |
| 170 | 0°51.0′ | 0°43.35′ | 85.00 | 0.18 | 170.00 | 0.71 | 170.00 | 113.33 | 56.67 |
| 180 | 0°54.0′ | 0°48.60′ | 90.00 | 0.21 | 180.00 | 0.85 | 180.00 | 120.00 | 60.00 |
| 190 | 0°57.0′ | 0°54.15′ | 95.00 | 0.25 | 190.00 | 1.00 | 190.00 | 126.67 | 63.33 |
| 200 | 1°00.0′ | 1°00.00′ | 100.00 | 0.29 | 199.99 | 1.16 | 200.00 | 133.34 | 66.67 |
| 210 | 1°03.0′ | 1°06.15′ | 105.00 | 0.34 | 209.99 | 1.35 | 210.00 | 140.00 | 70.00 |
| 220 | 1°06.0′ | 1°12.60′ | 110.00 | 0.39 | 219.99 | 1.55 | 220.00 | 146.67 | 73.34 |
| 230 | 1°09.0′ | 1°19.35′ | 115.00 | 0.44 | 229.99 | 1.77 | 229.99 | 153.34 | 76.67 |
| 240 | 1°12.0′ | 1°26.40′ | 120.00 | 0.50 | 239.98 | 2.01 | 239.99 | 160.01 | 80.00 |
| 250 | 1°15.0′ | 1°33.75′ | 125.00 | 0.57 | 249.98 | 2.27 | 249.99 | 166.67 | 83.34 |
| 260 | 1°18.0′ | 1°41.40′ | 130.00 | 0.64 | 259.98 | 2.56 | 259.99 | 173.34 | 86.67 |
| 270 | 1°21.0′ | 1°49.35′ | 135.00 | 0.72 | 269.97 | 2.86 | 269.99 | 180.01 | 90.01 |
| 280 | 1°24.0′ | 1°57.60′ | 139.99 | 0.80 | 279.97 | 3.19 | 279.99 | 186.68 | 93.34 |
| 290 | 1°27.0′ | 2°06.15′ | 144.99 | 0.89 | 289.96 | 3.55 | 289.98 | 193.35 | 96.68 |
| 300 | 1°30.0′ | 2°15.00′ | 149.99 | 0.98 | 299.95 | 3.93 | 299.98 | 200.02 | 100.01 |
| 310 | 1°33.0′ | 2°24.15′ | 154.99 | 1.08 | 309.95 | 4.33 | 309.98 | 206.69 | 103.35 |
| 320 | 1°36.0′ | 2°33.60′ | 159.99 | 1.19 | 319.94 | 4.77 | 319.97 | 213.36 | 106.69 |
| 330 | 1°39.0′ | 2°43.35′ | 164.99 | 1.31 | 329.93 | 5.23 | 329.97 | 220.03 | 110.02 |
| 340 | 1°42.0′ | 2°53.40′ | 169.99 | 1.43 | 339.91 | 5.72 | 339.96 | 226.70 | 113.36 |
| 350 | 1°45.0′ | 3°03.75′ | 174.98 | 1.56 | 349.90 | 6.23 | 349.96 | 233.37 | 116.70 |
| 360 | 1°48.0′ | 3°14.40′ | 179.98 | 1.70 | 359.88 | 6.78 | 359.95 | 240.04 | 120.04 |
| 370 | 1°51.0′ | 3°25.35′ | 184.98 | 1.84 | 369.87 | 7.37 | 369.94 | 246.71 | 123.38 |
| 380 | 1°54.0′ | 3°36.60′ | 189.97 | 1.99 | 379.85 | 7.98 | 379.93 | 253.39 | 126.71 |
| 390 | 1°57.0′ | 3°48.15′ | 194.97 | 2.16 | 389.83 | 8.62 | 389.92 | 260.06 | 130.05 |
| 400 | 2°00.0′ | 4°00.00′ | 199.97 | 2.33 | 399.81 | 9.31 | 399.91 | 266.73 | 133.40 |
| 410 | 2°03.0′ | 4°12.15′ | 204.96 | 2.51 | 409.78 | 10.02 | 409.90 | 273.41 | 136.74 |
| 420 | 2°06.0′ | 4°24.60′ | 209.96 | 2.69 | 419.75 | 10.77 | 419.89 | 280.09 | 140.08 |
| 430 | 2°09.0′ | 4°37.35′ | 214.95 | 2.89 | 429.72 | 11.56 | 429.88 | 286.76 | 143.42 |
| 440 | 2°12.0′ | 4°50.40′ | 219.95 | 3.10 | 439.69 | 12.38 | 439.86 | 293.44 | 146.77 |
| 450 | 2°15.0′ | 5°03.75′ | 224.94 | 3.31 | 449.65 | 13.25 | 449.84 | 300.12 | 150.11 |
| 460 | 2°18.0′ | 5°17.40′ | 229.93 | 3.54 | 459.61 | 14.15 | 459.83 | 306.80 | 153.46 |
| 470 | 2°21.0′ | 5°31.35′ | 234.93 | 3.77 | 469.56 | 15.09 | 469.81 | 313.49 | 156.81 |
| 480 | 2°24.0′ | 5°45.60′ | 239.92 | 4.02 | 479.52 | 16.07 | 479.78 | 320.17 | 160.15 |
| 490 | 2°27.0′ | 6°00.15′ | 244.91 | 4.28 | 489.46 | 17.10 | 489.76 | 326.85 | 163.50 |
| 500 | 2°30.0′ | 6°15.00′ | 249.90 | 4.54 | 499.41 | 18.17 | 499.74 | 333.54 | 166.86 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 2°33.0′ | 6°30.15′ | 254.89 | 4.82 | 509.34 | 19.28 | 509.71 | 340.23 | 170.21 |
| 520 | 2°36.0′ | 6°45.60′ | 259.88 | 5.11 | 519.28 | 20.43 | 519.68 | 346.92 | 173.56 |
| 530 | 2°39.0′ | 7°01.35′ | 264.87 | 5.41 | 529.20 | 21.63 | 529.65 | 353.61 | 176.92 |
| 540 | 2°42.0′ | 7°17.40′ | 269.85 | 5.72 | 539.13 | 22.88 | 539.61 | 360.31 | 180.28 |
| 550 | 2°45.0′ | 7°33.75′ | 274.84 | 6.05 | 549.04 | 24.17 | 549.57 | 367.00 | 183.64 |
| 560 | 2°48.0′ | 7°50.40′ | 279.83 | 6.38 | 558.95 | 25.51 | 559.53 | 373.70 | 187.00 |
| 570 | 2°51.0′ | 8°07.35′ | 284.81 | 6.73 | 568.86 | 26.90 | 569.49 | 380.40 | 190.36 |
| 580 | 2°54.0′ | 8°24.60′ | 289.79 | 7.09 | 578.75 | 28.33 | 579.44 | 387.10 | 193.73 |
| 590 | 2°57.0′ | 8°42.15′ | 294.77 | 7.46 | 588.64 | 29.82 | 589.40 | 393.81 | 197.10 |
| 600 | 3°00.0′ | 9°00.00′ | 299.75 | 7.85 | 598.52 | 31.36 | 599.34 | 400.52 | 200.47 |
| 610 | 3°03.0′ | 9°18.15′ | 304.73 | 8.25 | 608.39 | 32.95 | 609.29 | 407.23 | 203.85 |
| 620 | 3°06.0′ | 9°36.60′ | 309.71 | 8.66 | 618.26 | 34.59 | 619.23 | 413.94 | 207.22 |
| 630 | 3°09.0′ | 9°55.35′ | 314.69 | 9.08 | 628.11 | 36.29 | 629.16 | 420.66 | 210.60 |
| 640 | 3°12.0′ | 10°14.40′ | 319.66 | 9.52 | 637.96 | 38.04 | 639.09 | 427.38 | 213.98 |
| 650 | 3°15.0′ | 10°33.75′ | 324.63 | 9.97 | 647.79 | 39.85 | 649.02 | 434.11 | 217.37 |
| 660 | 3°18.0′ | 10°53.40′ | 329.60 | 10.44 | 657.62 | 41.71 | 658.94 | 440.84 | 220.76 |
| 670 | 3°21.0′ | 11°13.35′ | 334.57 | 10.92 | 667.43 | 43.62 | 668.86 | 447.57 | 224.15 |
| 680 | 3°24.0′ | 11°33.60′ | 339.54 | 11.42 | 677.24 | 45.60 | 678.77 | 454.30 | 227.55 |
| 690 | 3°27.0′ | 11°54.15′ | 344.50 | 11.93 | 687.03 | 47.63 | 688.68 | 461.04 | 230.95 |
| 700 | 3°30.0′ | 12°15.00′ | 349.47 | 12.45 | 696.81 | 49.72 | 698.58 | 467.79 | 234.35 |
| 710 | 3°33.0′ | 12°36.15′ | 354.43 | 12.99 | 706.57 | 51.88 | 708.47 | 474.54 | 237.76 |
| 720 | 3°36.0′ | 12°57.60′ | 359.39 | 13.55 | 716.32 | 54.09 | 718.36 | 481.29 | 241.18 |
| 730 | 3°39.0′ | 13°19.35′ | 364.34 | 14.12 | 726.06 | 56.36 | 728.25 | 488.05 | 244.59 |
| 740 | 3°42.0′ | 13°41.40′ | 369.30 | 14.70 | 735.79 | 58.70 | 738.12 | 494.82 | 248.02 |
| 750 | 3°45.0′ | 14°03.75′ | 374.25 | 15.31 | 745.49 | 61.10 | 747.99 | 501.59 | 251.44 |
| 760 | 3°48.0′ | 14°26.40′ | 379.20 | 15.93 | 755.19 | 63.56 | 757.86 | 508.36 | 254.88 |
| 770 | 3°51.0′ | 14°49.35′ | 384.14 | 16.56 | 764.86 | 66.08 | 767.71 | 515.14 | 258.31 |
| 780 | 3°54.0′ | 15°12.60′ | 389.09 | 17.21 | 774.52 | 68.67 | 777.56 | 521.93 | 261.76 |
| 790 | 3°57.0′ | 15°36.15′ | 394.03 | 17.88 | 784.16 | 71.33 | 787.40 | 528.73 | 265.21 |
| 800 | 4°00.0′ | 16°00.00′ | 398.96 | 18.57 | 793.78 | 74.05 | 797.23 | 535.53 | 268.66 |
| 810 | 4°03.0′ | 16°24.15′ | 403.90 | 19.27 | 803.39 | 76.84 | 807.05 | 542.34 | 272.13 |
| 820 | 4°06.0′ | 16°48.60′ | 408.83 | 19.99 | 812.97 | 79.70 | 816.87 | 549.15 | 275.59 |
| 830 | 4°09.0′ | 17°13.35′ | 413.75 | 20.72 | 822.53 | 82.63 | 826.67 | 555.98 | 279.07 |
| 840 | 4°12.0′ | 17°38.40′ | 418.68 | 21.48 | 832.07 | 85.62 | 836.47 | 562.81 | 282.55 |
| 850 | 4°15.0′ | 18°03.75′ | 423.60 | 22.25 | 841.59 | 88.69 | 846.25 | 569.64 | 286.04 |
| 860 | 4°18.0′ | 18°29.40′ | 428.51 | 23.04 | 851.09 | 91.82 | 856.03 | 576.49 | 289.54 |
| 870 | 4°21.0′ | 18°55.35′ | 433.42 | 23.85 | 860.56 | 95.03 | 865.79 | 583.35 | 293.05 |
| 880 | 4°24.0′ | 19°21.60′ | 438.33 | 24.68 | 870.01 | 98.31 | 875.54 | 590.21 | 296.56 |
| 890 | 4°27.0′ | 19°48.15′ | 443.23 | 25.52 | 879.43 | 101.66 | 885.28 | 597.09 | 300.08 |
| 900 | 4°30.0′ | 20°15.00′ | 448.13 | 26.39 | 888.82 | 105.09 | 895.01 | 603.97 | 303.62 |
| 910 | 4°33.0′ | 20°42.15′ | 453.03 | 27.27 | 898.19 | 108.58 | 904.73 | 610.87 | 307.16 |
| 920 | 4°36.0′ | 21°09.60′ | 457.92 | 28.18 | 907.53 | 112.16 | 914.44 | 617.77 | 310.71 |
| 930 | 4°39.0′ | 21°37.35′ | 462.80 | 29.10 | 916.84 | 115.80 | 924.13 | 624.69 | 314.27 |
| 940 | 4°42.0′ | 22°05.40′ | 467.68 | 30.04 | 926.12 | 119.53 | 933.80 | 631.62 | 317.84 |
| 950 | 4°45.0′ | 22°33.75′ | 472.56 | 31.00 | 935.37 | 123.33 | 943.47 | 638.56 | 321.42 |
| 960 | 4°48.0′ | 23°02.40′ | 477.42 | 31.98 | 944.59 | 127.20 | 953.12 | 645.51 | 325.01 |
| 970 | 4°51.0′ | 23°31.35′ | 482.29 | 32.99 | 953.78 | 131.15 | 962.75 | 652.47 | 328.62 |
| 980 | 4°54.0′ | 24°00.60′ | 487.15 | 34.01 | 962.93 | 135.18 | 972.37 | 659.45 | 332.23 |
| 990 | 4°57.0′ | 24°30.15′ | 492.00 | 35.05 | 972.05 | 139.29 | 981.98 | 666.44 | 335.86 |
| 1000 | 5°00.0′ | 25°00.00′ | 496.84 | 36.11 | 981.13 | 143.48 | 991.56 | 673.44 | 339.50 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.6

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°03.6′ | 0°00.18′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°07.2′ | 0°00.72′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°10.8′ | 0°01.62′ | 15.00 | 0.00 | 30.00 | 0.00 | 30.00 | 20.00 | 10.00 |
| 40 | 0°14.4′ | 0°02.88′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°18.0′ | 0°04.50′ | 25.00 | 0.01 | 50.00 | 0.02 | 50.00 | 33.33 | 16.67 |
| 60 | 0°21.6′ | 0°06.48′ | 30.00 | 0.01 | 60.00 | 0.04 | 60.00 | 40.00 | 20.00 |
| 70 | 0°25.2′ | 0°08.82′ | 35.00 | 0.01 | 70.00 | 0.06 | 70.00 | 46.67 | 23.33 |
| 80 | 0°28.8′ | 0°11.52′ | 40.00 | 0.02 | 80.00 | 0.09 | 80.00 | 53.33 | 26.67 |
| 90 | 0°32.4′ | 0°14.58′ | 45.00 | 0.03 | 90.00 | 0.13 | 90.00 | 60.00 | 30.00 |
| 100 | 0°36.0′ | 0°18.00′ | 50.00 | 0.04 | 100.00 | 0.17 | 100.00 | 66.67 | 33.33 |
| 110 | 0°39.6′ | 0°21.78′ | 55.00 | 0.06 | 110.00 | 0.23 | 110.00 | 73.33 | 36.67 |
| 120 | 0°43.2′ | 0°25.92′ | 60.00 | 0.08 | 120.00 | 0.30 | 120.00 | 80.00 | 40.00 |
| 130 | 0°46.8′ | 0°30.42′ | 65.00 | 0.10 | 130.00 | 0.38 | 130.00 | 86.67 | 43.33 |
| 140 | 0°50.4′ | 0°35.28′ | 70.00 | 0.12 | 140.00 | 0.48 | 140.00 | 93.33 | 46.67 |
| 150 | 0°54.0′ | 0°40.50′ | 75.00 | 0.15 | 150.00 | 0.59 | 150.00 | 100.00 | 50.00 |
| 160 | 0°57.6′ | 0°46.08′ | 80.00 | 0.18 | 160.00 | 0.71 | 160.00 | 106.67 | 53.33 |
| 170 | 1°01.2′ | 0°52.02′ | 85.00 | 0.21 | 170.00 | 0.86 | 170.00 | 113.33 | 56.67 |
| 180 | 1°04.8′ | 0°58.32′ | 90.00 | 0.25 | 179.99 | 1.02 | 180.00 | 120.00 | 60.00 |
| 190 | 1°08.4′ | 1°04.98′ | 95.00 | 0.30 | 189.99 | 1.20 | 190.00 | 126.67 | 63.34 |
| 200 | 1°12.0′ | 1°12.00′ | 100.00 | 0.35 | 199.99 | 1.40 | 200.00 | 133.34 | 66.67 |
| 210 | 1°15.6′ | 1°19.38′ | 105.00 | 0.40 | 209.99 | 1.62 | 210.00 | 140.00 | 70.00 |
| 220 | 1°19.2′ | 1°27.12′ | 110.00 | 0.46 | 219.99 | 1.86 | 219.99 | 146.67 | 73.34 |
| 230 | 1°22.8′ | 1°35.22′ | 115.00 | 0.53 | 229.98 | 2.12 | 229.99 | 153.34 | 76.67 |
| 240 | 1°26.4′ | 1°43.68′ | 120.00 | 0.60 | 239.98 | 2.41 | 239.99 | 160.01 | 80.01 |
| 250 | 1°30.0′ | 1°52.50′ | 125.00 | 0.68 | 249.97 | 2.73 | 249.99 | 166.68 | 83.34 |
| 260 | 1°33.6′ | 2°01.68′ | 129.99 | 0.77 | 259.97 | 3.07 | 259.99 | 173.34 | 86.68 |
| 270 | 1°37.2′ | 2°11.22′ | 134.99 | 0.86 | 269.96 | 3.43 | 269.98 | 180.01 | 90.01 |
| 280 | 1°40.8′ | 2°21.12′ | 139.99 | 0.96 | 279.95 | 3.83 | 279.98 | 186.68 | 93.35 |
| 290 | 1°44.4′ | 2°31.38′ | 144.99 | 1.06 | 289.94 | 4.26 | 289.97 | 193.35 | 96.68 |
| 300 | 1°48.0′ | 2°42.00′ | 149.99 | 1.18 | 299.93 | 4.71 | 299.97 | 200.02 | 100.02 |
| 310 | 1°51.6′ | 2°52.98′ | 154.99 | 1.30 | 309.92 | 5.20 | 309.97 | 206.69 | 103.36 |
| 320 | 1°55.2′ | 3°04.32′ | 159.98 | 1.43 | 319.91 | 5.72 | 319.96 | 213.37 | 106.70 |
| 330 | 1°58.8′ | 3°16.02′ | 164.98 | 1.57 | 329.89 | 6.27 | 329.95 | 220.04 | 110.03 |
| 340 | 2°02.4′ | 3°28.08′ | 169.98 | 1.71 | 339.88 | 6.86 | 339.94 | 226.71 | 113.37 |
| 350 | 2°06.0′ | 3°40.50′ | 174.98 | 1.87 | 349.86 | 7.48 | 349.94 | 233.38 | 116.71 |
| 360 | 2°09.6′ | 3°53.28′ | 179.97 | 2.04 | 359.83 | 8.14 | 359.93 | 240.06 | 120.05 |
| 370 | 2°13.2′ | 4°06.42′ | 184.97 | 2.21 | 369.81 | 8.84 | 369.92 | 246.73 | 123.39 |
| 380 | 2°16.8′ | 4°19.92′ | 189.96 | 2.39 | 379.78 | 9.57 | 379.90 | 253.41 | 126.74 |
| 390 | 2°20.4′ | 4°33.78′ | 194.96 | 2.59 | 389.75 | 10.35 | 389.89 | 260.09 | 130.08 |
| 400 | 2°24.0′ | 4°48.00′ | 199.95 | 2.79 | 399.72 | 11.16 | 399.88 | 266.76 | 133.42 |
| 410 | 2°27.6′ | 5°02.58′ | 204.95 | 3.01 | 409.68 | 12.02 | 409.86 | 273.44 | 136.77 |
| 420 | 2°31.2′ | 5°17.52′ | 209.94 | 3.23 | 419.64 | 12.92 | 419.84 | 280.13 | 140.11 |
| 430 | 2°34.8′ | 5°32.82′ | 214.93 | 3.47 | 429.60 | 13.87 | 429.82 | 286.81 | 143.46 |
| 440 | 2°38.4′ | 5°48.48′ | 219.92 | 3.72 | 439.55 | 14.86 | 439.80 | 293.49 | 146.81 |
| 450 | 2°42.0′ | 6°04.50′ | 224.92 | 3.97 | 449.49 | 15.89 | 449.78 | 300.18 | 150.16 |
| 460 | 2°45.6′ | 6°20.88′ | 229.91 | 4.25 | 459.44 | 16.97 | 459.75 | 306.86 | 153.51 |
| 470 | 2°49.2′ | 6°37.62′ | 234.90 | 4.53 | 469.37 | 18.10 | 469.72 | 313.55 | 156.87 |
| 480 | 2°52.8′ | 6°54.72′ | 239.88 | 4.82 | 479.30 | 19.28 | 479.69 | 320.24 | 160.22 |
| 490 | 2°56.4′ | 7°12.18′ | 244.87 | 5.13 | 489.23 | 20.51 | 489.66 | 326.94 | 163.58 |
| 500 | 3°00.0′ | 7°30.00′ | 249.86 | 5.45 | 499.14 | 21.79 | 499.62 | 333.63 | 166.94 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.6—Continued

| L | D | S | q | p | x | y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 3°03.6′ | 7°48.18′ | 254.84 | 5.78 | 509.05 | 23.12 | 509.58 | 340.33 | 170.30 |
| 520 | 3°07.2′ | 8°06.72′ | 259.83 | 6.13 | 518.96 | 24.51 | 519.54 | 347.03 | 173.66 |
| 530 | 3°10.8′ | 8°25.62′ | 264.81 | 6.49 | 528.85 | 25.94 | 529.49 | 353.73 | 177.03 |
| 540 | 3°14.4′ | 8°44.88′ | 269.79 | 6.86 | 538.74 | 27.44 | 539.44 | 360.44 | 180.40 |
| 550 | 3°18.0′ | 9°04.50′ | 274.77 | 7.25 | 548.62 | 28.99 | 549.39 | 367.15 | 183.77 |
| 560 | 3°21.6′ | 9°24.48′ | 279.75 | 7.66 | 558.49 | 30.59 | 559.33 | 373.86 | 187.15 |
| 570 | 3°25.2′ | 9°44.82′ | 284.73 | 8.07 | 568.35 | 32.26 | 569.27 | 380.58 | 190.53 |
| 580 | 3°28.8′ | 10°05.52′ | 289.70 | 8.50 | 578.20 | 33.98 | 579.20 | 387.30 | 193.91 |
| 590 | 3°32.4′ | 10°26.58′ | 294.67 | 8.95 | 588.04 | 35.76 | 589.13 | 394.02 | 197.29 |
| 600 | 3°36.0′ | 10°48.00′ | 299.65 | 9.41 | 597.87 | 37.60 | 599.05 | 400.75 | 200.68 |
| 610 | 3°39.6′ | 11°09.78′ | 304.61 | 9.89 | 607.69 | 39.51 | 608.97 | 407.48 | 204.07 |
| 620 | 3°43.2′ | 11°31.92′ | 309.58 | 10.38 | 617.49 | 41.48 | 618.88 | 414.21 | 207.47 |
| 630 | 3°46.8′ | 11°54.42′ | 314.55 | 10.89 | 627.28 | 43.51 | 628.79 | 420.95 | 210.87 |
| 640 | 3°50.4′ | 12°17.28′ | 319.51 | 11.42 | 637.06 | 45.60 | 638.69 | 427.70 | 214.27 |
| 650 | 3°54.0′ | 12°40.50′ | 324.47 | 11.96 | 646.83 | 47.76 | 648.59 | 434.45 | 217.68 |
| 660 | 3°57.6′ | 13°04.08′ | 329.43 | 12.52 | 656.57 | 49.99 | 658.48 | 441.20 | 221.10 |
| 670 | 4°01.2′ | 13°28.02′ | 334.38 | 13.10 | 666.31 | 52.29 | 668.36 | 447.97 | 224.52 |
| 680 | 4°04.8′ | 13°52.32′ | 339.34 | 13.69 | 676.02 | 54.65 | 678.23 | 454.73 | 227.94 |
| 690 | 4°08.4′ | 14°16.98′ | 344.29 | 14.30 | 685.72 | 57.08 | 688.10 | 461.51 | 231.37 |
| 700 | 4°12.0′ | 14°42.00′ | 349.23 | 14.93 | 695.41 | 59.58 | 697.95 | 468.29 | 234.81 |
| 710 | 4°15.6′ | 15°07.38′ | 354.18 | 15.58 | 705.07 | 62.16 | 707.80 | 475.07 | 238.25 |
| 720 | 4°19.2′ | 15°33.12′ | 359.12 | 16.24 | 714.71 | 64.80 | 717.65 | 481.87 | 241.70 |
| 730 | 4°22.8′ | 15°59.22′ | 364.05 | 16.93 | 724.34 | 67.52 | 727.48 | 488.67 | 245.15 |
| 740 | 4°26.4′ | 16°25.68′ | 368.99 | 17.63 | 733.94 | 70.31 | 737.30 | 495.47 | 248.61 |
| 750 | 4°30.0′ | 16°52.50′ | 373.92 | 18.35 | 743.52 | 73.18 | 747.11 | 502.29 | 252.08 |
| 760 | 4°33.6′ | 17°19.68′ | 378.84 | 19.09 | 753.08 | 76.12 | 756.92 | 509.12 | 255.56 |
| 770 | 4°37.2′ | 17°47.22′ | 383.77 | 19.85 | 762.61 | 79.13 | 766.71 | 515.95 | 259.05 |
| 780 | 4°40.8′ | 18°15.12′ | 388.68 | 20.63 | 772.12 | 82.23 | 776.49 | 522.79 | 262.54 |
| 790 | 4°44.4′ | 18°43.38′ | 393.60 | 21.43 | 781.61 | 85.40 | 786.26 | 529.64 | 266.04 |
| 800 | 4°48.0′ | 19°12.00′ | 398.51 | 22.25 | 791.06 | 88.65 | 796.01 | 536.50 | 269.55 |
| 810 | 4°51.6′ | 19°40.98′ | 403.41 | 23.09 | 800.49 | 91.97 | 805.76 | 543.38 | 273.07 |
| 820 | 4°55.2′ | 20°10.32′ | 408.31 | 23.95 | 809.89 | 95.38 | 815.49 | 550.26 | 276.60 |
| 830 | 4°58.8′ | 20°40.02′ | 413.21 | 24.83 | 819.27 | 98.87 | 825.21 | 557.15 | 280.14 |
| 840 | 5°02.4′ | 21°10.08′ | 418.10 | 25.74 | 828.61 | 102.44 | 834.92 | 564.06 | 283.69 |
| 850 | 5°06.0′ | 21°40.50′ | 422.98 | 26.66 | 837.92 | 106.09 | 844.61 | 570.97 | 287.25 |
| 860 | 5°09.6′ | 22°11.28′ | 427.86 | 27.60 | 847.19 | 109.83 | 854.28 | 577.90 | 290.83 |
| 870 | 5°13.2′ | 22°42.42′ | 432.73 | 28.57 | 856.43 | 113.65 | 863.94 | 584.84 | 294.41 |
| 880 | 5°16.8′ | 23°13.92′ | 437.60 | 29.56 | 865.64 | 117.55 | 873.59 | 591.80 | 298.01 |
| 890 | 5°20.4′ | 23°45.78′ | 442.46 | 30.57 | 874.81 | 121.54 | 883.21 | 598.77 | 301.61 |
| 900 | 5°24.0′ | 24°18.00′ | 447.32 | 31.61 | 883.95 | 125.61 | 892.83 | 605.75 | 305.24 |
| 910 | 5°27.6′ | 24°50.58′ | 452.16 | 32.66 | 893.04 | 129.77 | 902.42 | 612.75 | 308.87 |
| 920 | 5°31.2′ | 25°23.52′ | 457.00 | 33.74 | 902.09 | 134.01 | 911.99 | 619.76 | 312.52 |
| 930 | 5°34.8′ | 25°56.82′ | 461.84 | 34.84 | 911.11 | 138.34 | 921.55 | 626.79 | 316.19 |
| 940 | 5°38.4′ | 26°30.48′ | 466.67 | 35.97 | 920.08 | 142.76 | 931.09 | 633.84 | 319.86 |
| 950 | 5°42.0′ | 27°04.50′ | 471.49 | 37.11 | 929.00 | 147.27 | 940.61 | 640.90 | 323.56 |
| 960 | 5°45.6′ | 27°38.88′ | 476.30 | 38.28 | 937.89 | 151.87 | 950.10 | 647.98 | 327.27 |
| 970 | 5°49.2′ | 28°13.62′ | 481.10 | 39.48 | 946.72 | 156.55 | 959.58 | 655.08 | 331.00 |
| 980 | 5°52.8′ | 28°48.72′ | 485.90 | 40.70 | 955.51 | 161.33 | 969.03 | 662.20 | 334.74 |
| 990 | 5°56.4′ | 29°24.18′ | 490.69 | 41.94 | 964.24 | 166.19 | 978.46 | 669.34 | 338.51 |
| 1000 | 6°00.0′ | 30°00.00′ | 495.47 | 43.21 | 972.93 | 171.14 | 987.87 | 676.50 | 342.29 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 0.7

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°04.2′ | 0°00.21′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°08.4′ | 0°00.84′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°12.6′ | 0°01.89′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°16.8′ | 0°03.36′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°21.0′ | 0°05.25′ | 25.00 | 0.01 | 50.00 | 0.03 | 50.00 | 33.33 | 16.67 |
| 60 | 0°25.2′ | 0°07.56′ | 30.00 | 0.01 | 60.00 | 0.04 | 60.00 | 40.00 | 20.00 |
| 70 | 0°29.4′ | 0°10.29′ | 35.00 | 0.02 | 70.00 | 0.07 | 70.00 | 46.67 | 23.33 |
| 80 | 0°33.6′ | 0°13.44′ | 40.00 | 0.03 | 80.00 | 0.10 | 80.00 | 53.33 | 26.67 |
| 90 | 0°37.8′ | 0°17.01′ | 45.00 | 0.04 | 90.00 | 0.15 | 90.00 | 60.00 | 30.00 |
| 100 | 0°42.0′ | 0°21.00′ | 50.00 | 0.05 | 100.00 | 0.20 | 100.00 | 66.67 | 33.33 |
| 110 | 0°46.2′ | 0°25.41′ | 55.00 | 0.07 | 110.00 | 0.27 | 110.00 | 73.33 | 36.67 |
| 120 | 0°50.4′ | 0°30.24′ | 60.00 | 0.09 | 120.00 | 0.35 | 120.00 | 80.00 | 40.00 |
| 130 | 0°54.6′ | 0°35.49′ | 65.00 | 0.11 | 130.00 | 0.45 | 130.00 | 86.67 | 43.33 |
| 140 | 0°58.8′ | 0°41.16′ | 70.00 | 0.14 | 140.00 | 0.56 | 140.00 | 93.33 | 46.67 |
| 150 | 1°03.0′ | 0°47.25′ | 75.00 | 0.17 | 150.00 | 0.69 | 150.00 | 100.00 | 50.00 |
| 160 | 1°07.2′ | 0°53.76′ | 80.00 | 0.21 | 160.00 | 0.83 | 160.00 | 106.67 | 53.33 |
| 170 | 1°11.4′ | 1°00.69′ | 85.00 | 0.25 | 169.99 | 1.00 | 170.00 | 113.34 | 56.67 |
| 180 | 1°15.6′ | 1°08.04′ | 90.00 | 0.30 | 179.99 | 1.19 | 180.00 | 120.00 | 60.00 |
| 190 | 1°19.8′ | 1°15.81′ | 95.00 | 0.35 | 189.99 | 1.40 | 190.00 | 126.67 | 63.34 |
| 200 | 1°24.0′ | 1°24.00′ | 100.00 | 0.41 | 199.99 | 1.63 | 199.99 | 133.34 | 66.67 |
| 210 | 1°28.2′ | 1°32.61′ | 105.00 | 0.47 | 209.98 | 1.89 | 209.99 | 140.01 | 70.00 |
| 220 | 1°32.4′ | 1°41.64′ | 110.00 | 0.54 | 219.98 | 2.17 | 219.99 | 146.67 | 73.34 |
| 230 | 1°36.6′ | 1°51.09′ | 115.00 | 0.62 | 229.98 | 2.48 | 229.99 | 153.34 | 76.67 |
| 240 | 1°40.8′ | 2°00.96′ | 120.00 | 0.70 | 239.97 | 2.81 | 239.99 | 160.01 | 80.01 |
| 250 | 1°45.0′ | 2°11.25′ | 124.99 | 0.80 | 249.96 | 3.18 | 249.98 | 166.63 | 83.34 |
| 260 | 1°49.2′ | 2°21.96′ | 129.99 | 0.89 | 259.96 | 3.58 | 259.98 | 173.35 | 86.68 |
| 270 | 1°53.4′ | 2°33.09′ | 134.99 | 1.00 | 269.95 | 4.01 | 269.98 | 180.02 | 90.02 |
| 280 | 1°57.6′ | 2°44.64′ | 139.99 | 1.12 | 279.94 | 4.47 | 279.97 | 186.69 | 93.35 |
| 290 | 2°01.8′ | 2°56.61′ | 144.99 | 1.24 | 289.92 | 4.97 | 289.97 | 193.36 | 96.69 |
| 300 | 2°06.0′ | 3°09.00′ | 149.98 | 1.37 | 299.91 | 5.50 | 299.96 | 200.03 | 100.03 |
| 310 | 2°10.2′ | 3°21.81′ | 154.98 | 1.52 | 309.89 | 6.06 | 309.95 | 206.70 | 103.37 |
| 320 | 2°14.4′ | 3°35.04′ | 159.98 | 1.67 | 319.87 | 6.67 | 319.94 | 213.38 | 106.71 |
| 330 | 2°18.6′ | 3°48.69′ | 164.98 | 1.83 | 329.85 | 7.32 | 329.94 | 220.05 | 110.05 |
| 340 | 2°22.8′ | 4°02.76′ | 169.97 | 2.00 | 339.83 | 8.00 | 339.92 | 226.73 | 113.39 |
| 350 | 2°27.0′ | 4°17.25′ | 174.97 | 2.18 | 349.80 | 8.73 | 349.91 | 233.40 | 116.73 |
| 360 | 2°31.2′ | 4°32.16′ | 179.96 | 2.37 | 359.77 | 9.50 | 359.90 | 240.08 | 120.07 |
| 370 | 2°35.4′ | 4°47.49′ | 184.96 | 2.58 | 369.74 | 10.31 | 369.88 | 246.76 | 123.42 |
| 380 | 2°39.6′ | 5°03.24′ | 189.95 | 2.79 | 379.70 | 11.17 | 379.87 | 253.44 | 126.76 |
| 390 | 2°43.8′ | 5°19.41′ | 194.94 | 3.02 | 389.66 | 12.07 | 389.85 | 260.12 | 130.11 |
| 400 | 2°48.0′ | 5°36.00′ | 199.94 | 3.26 | 399.62 | 13.02 | 399.83 | 266.80 | 133.45 |
| 410 | 2°52.2′ | 5°53.01′ | 204.93 | 3.51 | 409.57 | 14.02 | 409.81 | 273.48 | 136.80 |
| 420 | 2°56.4′ | 6°10.44′ | 209.92 | 3.77 | 419.51 | 15.07 | 419.78 | 280.17 | 140.15 |
| 430 | 3°00.6′ | 6°28.29′ | 214.91 | 4.05 | 429.45 | 16.17 | 429.76 | 286.86 | 143.51 |
| 440 | 3°04.8′ | 6°46.56′ | 219.90 | 4.33 | 439.38 | 17.33 | 439.73 | 293.55 | 146.86 |
| 450 | 3°09.0′ | 7°05.25′ | 224.89 | 4.64 | 449.31 | 18.53 | 449.69 | 300.24 | 150.22 |
| 460 | 3°13.2′ | 7°24.36′ | 229.87 | 4.95 | 459.23 | 19.80 | 459.66 | 306.94 | 153.58 |
| 470 | 3°17.4′ | 7°43.89′ | 234.86 | 5.28 | 469.14 | 21.11 | 469.62 | 313.63 | 156.94 |
| 480 | 3°21.6′ | 8°03.84′ | 239.84 | 5.63 | 479.05 | 22.49 | 479.58 | 320.33 | 160.30 |
| 490 | 3°25.8′ | 8°24.21′ | 244.82 | 5.98 | 488.95 | 23.92 | 489.53 | 327.04 | 163.67 |
| 500 | 3°30.0′ | 8°45.00′ | 249.81 | 6.36 | 498.84 | 25.41 | 499.48 | 333.74 | 167.04 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.7—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 3°34.2′ | 9°06.21′ | 254.79 | 6.75 | 508.71 | 26.96 | 509.43 | 340.45 | 170.41 |
| 520 | 3°38.4′ | 9°27.34′ | 259.76 | 7.15 | 518.58 | 28.58 | 519.37 | 347.16 | 173.78 |
| 530 | 3°42.6′ | 9°49.39′ | 264.74 | 7.57 | 528.44 | 30.25 | 529.31 | 353.88 | 177.16 |
| 540 | 3°46.8′ | 10°12.36′ | 269.71 | 8.01 | 538.29 | 31.99 | 539.24 | 360.60 | 180.55 |
| 550 | 3°51.0′ | 10°35.25′ | 274.69 | 8.46 | 548.12 | 33.80 | 549.17 | 367.32 | 183.93 |
| 560 | 3°55.2′ | 10°58.56′ | 279.66 | 8.93 | 557.95 | 35.67 | 559.09 | 374.05 | 187.32 |
| 570 | 3°59.4′ | 11°22.29′ | 284.63 | 9.41 | 567.76 | 37.60 | 569.00 | 380.79 | 190.72 |
| 580 | 4°03.6′ | 11°46.44′ | 289.59 | 9.92 | 577.56 | 39.61 | 578.91 | 387.53 | 194.11 |
| 590 | 4°07.8′ | 12°11.01′ | 294.56 | 10.44 | 587.34 | 41.68 | 588.82 | 394.27 | 197.52 |
| 600 | 4°12.0′ | 12°36.00′ | 299.52 | 10.98 | 597.10 | 43.83 | 598.71 | 401.02 | 200.93 |
| 610 | 4°16.2′ | 13°01.41′ | 304.48 | 11.53 | 606.86 | 46.05 | 608.60 | 407.77 | 204.34 |
| 620 | 4°20.4′ | 13°27.24′ | 309.43 | 12.11 | 616.59 | 48.34 | 618.48 | 414.53 | 207.76 |
| 630 | 4°24.6′ | 13°53.49′ | 314.38 | 12.70 | 626.31 | 50.70 | 628.36 | 421.30 | 211.18 |
| 640 | 4°28.8′ | 14°20.16′ | 319.33 | 13.31 | 636.00 | 53.14 | 638.22 | 428.07 | 214.61 |
| 650 | 4°33.0′ | 14°47.25′ | 324.28 | 13.95 | 645.68 | 55.65 | 648.08 | 434.85 | 218.05 |
| 660 | 4°37.2′ | 15°14.76′ | 329.22 | 14.60 | 655.34 | 58.25 | 657.93 | 441.64 | 221.49 |
| 670 | 4°41.4′ | 15°42.69′ | 334.16 | 15.27 | 664.98 | 60.91 | 667.76 | 448.44 | 224.95 |
| 680 | 4°45.6′ | 16°11.04′ | 339.10 | 15.96 | 674.59 | 63.66 | 677.59 | 455.24 | 228.40 |
| 690 | 4°49.8′ | 16°39.81′ | 344.03 | 16.67 | 684.19 | 66.49 | 687.41 | 462.05 | 231.87 |
| 700 | 4°54.0′ | 17°09.00′ | 348.96 | 17.40 | 693.75 | 69.40 | 697.22 | 468.88 | 235.34 |
| 710 | 4°58.2′ | 17°38.61′ | 353.88 | 18.16 | 703.30 | 72.39 | 707.01 | 475.71 | 238.83 |
| 720 | 5°02.4′ | 18°08.64′ | 358.80 | 18.93 | 712.81 | 75.46 | 716.80 | 482.55 | 242.32 |
| 730 | 5°06.6′ | 18°39.09′ | 363.71 | 19.73 | 722.30 | 78.61 | 726.57 | 489.40 | 245.82 |
| 740 | 5°10.8′ | 19°09.96′ | 368.62 | 20.55 | 731.76 | 81.86 | 736.33 | 496.26 | 249.33 |
| 750 | 5°15.0′ | 19°41.25′ | 373.53 | 21.39 | 741.19 | 85.18 | 746.07 | 503.13 | 252.85 |
| 760 | 5°19.2′ | 20°12.96′ | 378.43 | 22.25 | 750.59 | 88.59 | 755.80 | 510.01 | 256.38 |
| 770 | 5°23.4′ | 20°45.09′ | 383.32 | 23.13 | 759.96 | 92.09 | 765.52 | 516.91 | 259.92 |
| 780 | 5°27.6′ | 21°17.64′ | 388.21 | 24.04 | 769.29 | 95.68 | 775.22 | 523.81 | 263.47 |
| 790 | 5°31.8′ | 21°50.61′ | 393.09 | 24.97 | 778.59 | 99.36 | 784.91 | 530.73 | 267.03 |
| 800 | 5°36.0′ | 22°24.00′ | 397.97 | 25.92 | 787.86 | 103.12 | 794.58 | 537.67 | 270.61 |
| 810 | 5°40.2′ | 22°57.81′ | 402.84 | 26.90 | 797.09 | 106.98 | 804.23 | 544.61 | 274.20 |
| 820 | 5°44.4′ | 23°32.04′ | 407.71 | 27.90 | 806.27 | 110.92 | 813.87 | 551.58 | 277.80 |
| 830 | 5°48.6′ | 24°06.69′ | 412.56 | 28.92 | 815.42 | 114.96 | 823.49 | 558.55 | 281.42 |
| 840 | 5°52.8′ | 24°41.76′ | 417.41 | 29.97 | 824.53 | 119.10 | 833.08 | 565.55 | 285.05 |
| 850 | 5°57.0′ | 25°17.25′ | 422.26 | 31.05 | 833.59 | 123.32 | 842.66 | 572.56 | 288.70 |
| 860 | 6°01.2′ | 25°53.16′ | 427.09 | 32.14 | 842.61 | 127.64 | 852.22 | 579.59 | 292.36 |
| 870 | 6°05.4′ | 26°29.49′ | 431.92 | 33.27 | 851.58 | 132.05 | 861.76 | 586.63 | 296.04 |
| 880 | 6°09.6′ | 27°06.24′ | 436.74 | 34.41 | 860.51 | 136.56 | 871.28 | 593.69 | 299.73 |
| 890 | 6°13.8′ | 27°43.41′ | 441.55 | 35.59 | 869.39 | 141.16 | 880.77 | 600.78 | 303.45 |
| 900 | 6°18.0′ | 28°21.00′ | 446.35 | 36.79 | 878.21 | 145.86 | 890.24 | 607.88 | 307.18 |
| 910 | 6°22.2′ | 28°59.01′ | 451.15 | 38.01 | 886.99 | 150.66 | 899.69 | 615.00 | 310.93 |
| 920 | 6°26.4′ | 29°37.44′ | 455.93 | 39.26 | 895.71 | 155.56 | 909.12 | 622.15 | 314.70 |
| 930 | 6°30.6′ | 30°16.29′ | 460.71 | 40.54 | 904.37 | 160.55 | 918.51 | 629.31 | 318.49 |
| 940 | 6°34.8′ | 30°55.56′ | 465.47 | 41.84 | 912.98 | 165.64 | 927.88 | 636.50 | 322.30 |
| 950 | 6°39.0′ | 31°35.25′ | 470.23 | 43.17 | 921.53 | 170.83 | 937.23 | 643.72 | 326.13 |
| 960 | 6°43.2′ | 32°15.36′ | 474.97 | 44.53 | 930.02 | 176.11 | 946.55 | 650.96 | 329.98 |
| 970 | 6°47.4′ | 32°55.89′ | 479.71 | 45.92 | 938.44 | 181.50 | 955.83 | 658.22 | 333.86 |
| 980 | 6°51.6′ | 33°36.84′ | 484.43 | 47.33 | 946.80 | 186.99 | 965.09 | 665.51 | 337.77 |
| 990 | 6°55.8′ | 34°18.21′ | 489.14 | 48.77 | 955.10 | 192.57 | 974.32 | 672.83 | 341.70 |
| 1000 | 7°00.0′ | 35°00.00′ | 493.84 | 50.23 | 963.32 | 198.26 | 983.51 | 680.18 | 345.65 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a =0.8

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°04.8′ | 0°00.24′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°09.6′ | 0°00.96′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°14.4′ | 0°02.16′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°19.2′ | 0°03.84′ | 20.00 | 0.00 | 40.00 | 0.01 | 40.00 | 26.67 | 13.33 |
| 50 | 0°24.0′ | 0°06.00′ | 25.00 | 0.01 | 50.00 | 0.03 | 50.00 | 33.33 | 16.67 |
| 60 | 0°28.8′ | 0°08.64′ | 30.00 | 0.01 | 60.00 | 0.05 | 60.00 | 40.00 | 20.00 |
| 70 | 0°33.6′ | 0°11.76′ | 35.00 | 0.02 | 70.00 | 0.08 | 70.00 | 46.67 | 23.33 |
| 80 | 0°38.4′ | 0°15.36′ | 40.00 | 0.03 | 80.00 | 0.12 | 80.00 | 53.33 | 26.67 |
| 90 | 0°43.2′ | 0°19.44′ | 45.00 | 0.04 | 90.00 | 0.17 | 90.00 | 60.00 | 30.00 |
| 100 | 0°48.0′ | 0°24.00′ | 50.00 | 0.06 | 100.00 | 0.23 | 100.00 | 66.67 | 33.33 |
| 110 | 0°52.8′ | 0°29.04′ | 55.00 | 0.08 | 110.00 | 0.31 | 110.00 | 73.33 | 36.67 |
| 120 | 0°57.6′ | 0°34.56′ | 60.00 | 0.10 | 120.00 | 0.40 | 120.00 | 80.00 | 40.00 |
| 130 | 1°02.4′ | 0°40.56′ | 65.00 | 0.13 | 130.00 | 0.51 | 130.00 | 86.67 | 43.33 |
| 140 | 1°07.2′ | 0°47.04′ | 70.00 | 0.16 | 140.00 | 0.64 | 140.00 | 93.33 | 46.67 |
| 150 | 1°12.0′ | 0°54.00′ | 75.00 | 0.20 | 150.00 | 0.79 | 150.00 | 100.00 | 50.00 |
| 160 | 1°16.8′ | 1°01.44′ | 80.00 | 0.24 | 159.99 | 0.95 | 160.00 | 106.67 | 53.33 |
| 170 | 1°21.6′ | 1°09.36′ | 85.00 | 0.29 | 169.99 | 1.14 | 170.00 | 113.34 | 56.67 |
| 180 | 1°26.4′ | 1°17.76′ | 90.00 | 0.34 | 179.99 | 1.36 | 180.00 | 120.00 | 60.00 |
| 190 | 1°31.2′ | 1°26.64′ | 95.00 | 0.40 | 189.99 | 1.60 | 189.99 | 126.67 | 63.34 |
| 200 | 1°36.0′ | 1°36.00′ | 100.00 | 0.47 | 199.98 | 1.86 | 199.99 | 133.34 | 66.67 |
| 210 | 1°40.8′ | 1°45.84′ | 105.00 | 0.54 | 209.98 | 2.15 | 209.99 | 140.01 | 70.01 |
| 220 | 1°45.6′ | 1°56.16′ | 110.00 | 0.62 | 219.97 | 2.48 | 219.99 | 146.68 | 73.34 |
| 230 | 1°50.4′ | 2°06.96′ | 114.99 | 0.71 | 229.97 | 2.83 | 229.99 | 153.34 | 76.68 |
| 240 | 1°55.2′ | 2°18.24′ | 119.99 | 0.80 | 239.96 | 3.22 | 239.98 | 160.01 | 80.01 |
| 250 | 2°00.0′ | 2°30.00′ | 124.99 | 0.91 | 249.95 | 3.64 | 249.98 | 166.68 | 83.35 |
| 260 | 2°04.8′ | 2°42.24′ | 129.99 | 1.02 | 259.94 | 4.09 | 259.97 | 173.35 | 86.69 |
| 270 | 2°09.6′ | 2°54.96′ | 134.99 | 1.14 | 269.93 | 4.58 | 269.97 | 180.02 | 90.02 |
| 280 | 2°14.4′ | 3°08.16′ | 139.99 | 1.28 | 279.92 | 5.11 | 279.96 | 186.70 | 93.36 |
| 290 | 2°19.2′ | 3°21.84′ | 144.98 | 1.42 | 289.90 | 5.67 | 289.96 | 193.37 | 96.70 |
| 300 | 2°24.0′ | 3°36.00′ | 149.98 | 1.57 | 299.88 | 6.28 | 299.95 | 200.04 | 100.04 |
| 310 | 2°28.8′ | 3°50.64′ | 154.98 | 1.73 | 309.86 | 6.93 | 309.94 | 206.72 | 103.38 |
| 320 | 2°33.6′ | 4°05.76′ | 159.97 | 1.91 | 319.84 | 7.62 | 319.93 | 213.39 | 106.72 |
| 330 | 2°38.4′ | 4°21.36′ | 164.97 | 2.09 | 329.81 | 8.36 | 329.92 | 220.07 | 110.06 |
| 340 | 2°43.2′ | 4°37.44′ | 169.96 | 2.29 | 339.78 | 9.14 | 339.90 | 226.74 | 113.40 |
| 350 | 2°48.0′ | 4°54.00′ | 174.96 | 2.49 | 349.74 | 9.97 | 349.89 | 233.42 | 116.75 |
| 360 | 2°52.8′ | 5°11.04′ | 179.95 | 2.71 | 359.71 | 10.85 | 359.87 | 240.10 | 120.09 |
| 370 | 2°57.6′ | 5°28.56′ | 184.94 | 2.95 | 369.66 | 11.78 | 369.85 | 246.78 | 123.44 |
| 380 | 3°02.4′ | 5°46.56′ | 189.94 | 3.19 | 379.61 | 12.76 | 379.83 | 253.47 | 126.79 |
| 390 | 3°07.2′ | 6°05.04′ | 194.93 | 3.45 | 389.56 | 13.79 | 389.80 | 260.15 | 130.14 |
| 400 | 3°12.0′ | 6°24.00′ | 199.92 | 3.72 | 399.50 | 14.88 | 399.78 | 266.84 | 133.49 |
| 410 | 3°16.8′ | 6°43.44′ | 204.91 | 4.01 | 409.44 | 16.02 | 409.75 | 273.53 | 136.85 |
| 420 | 3°21.6′ | 7°03.36′ | 209.89 | 4.31 | 419.36 | 17.22 | 419.72 | 280.22 | 140.20 |
| 430 | 3°26.4′ | 7°23.76′ | 214.88 | 4.62 | 429.28 | 18.48 | 429.68 | 286.92 | 143.56 |
| 440 | 3°31.2′ | 7°44.64′ | 219.87 | 4.95 | 439.20 | 19.80 | 439.64 | 293.61 | 146.92 |
| 450 | 3°36.0′ | 8°06.00′ | 224.85 | 5.30 | 449.10 | 21.18 | 449.60 | 300.31 | 150.29 |
| 460 | 3°40.8′ | 8°27.84′ | 229.83 | 5.66 | 459.00 | 22.62 | 459.55 | 307.02 | 153.65 |
| 470 | 3°45.6′ | 8°50.16′ | 234.81 | 6.04 | 468.88 | 24.12 | 469.50 | 313.72 | 157.02 |
| 480 | 3°50.4′ | 9°12.96′ | 239.79 | 6.43 | 478.76 | 25.69 | 479.45 | 320.43 | 160.40 |
| 490 | 3°55.2′ | 9°36.24′ | 244.77 | 6.84 | 488.63 | 27.32 | 489.39 | 327.15 | 163.77 |
| 500 | 4°00.0′ | 10°00.00′ | 249.75 | 7.26 | 498.48 | 29.03 | 499.32 | 333.87 | 167.15 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.8—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 4°04.8′ | 10°24.24′ | 254.72 | 7.71 | 508.32 | 30.80 | 509.25 | 340.59 | 170.54 |
| 520 | 4°09.6′ | 10°48.96′ | 259.69 | 8.17 | 518.15 | 32.64 | 519.18 | 347.32 | 173.92 |
| 530 | 4°14.4′ | 11°14.16′ | 264.66 | 8.65 | 527.97 | 34.56 | 529.09 | 354.05 | 177.32 |
| 540 | 4°19.2′ | 11°39.84′ | 269.63 | 9.15 | 537.77 | 36.54 | 539.01 | 360.78 | 180.71 |
| 550 | 4°24.0′ | 12°06.00′ | 274.59 | 9.66 | 547.55 | 38.59 | 548.91 | 367.53 | 184.12 |
| 560 | 4°28.8′ | 12°32.64′ | 279.55 | 10.20 | 557.32 | 40.73 | 558.81 | 374.27 | 187.52 |
| 570 | 4°33.6′ | 12°59.76′ | 284.51 | 10.75 | 567.07 | 42.94 | 568.70 | 381.03 | 190.94 |
| 580 | 4°38.4′ | 13°27.36′ | 289.47 | 11.33 | 576.81 | 45.23 | 578.58 | 387.79 | 194.36 |
| 590 | 4°43.2′ | 13°55.44′ | 294.42 | 11.92 | 586.53 | 47.59 | 588.45 | 394.56 | 197.78 |
| 600 | 4°48.0′ | 14°24.00′ | 299.37 | 12.54 | 596.22 | 50.04 | 598.32 | 401.33 | 201.21 |
| 610 | 4°52.8′ | 14°53.04′ | 304.32 | 13.17 | 605.90 | 52.57 | 608.17 | 408.11 | 204.65 |
| 620 | 4°57.6′ | 15°22.56′ | 309.26 | 13.83 | 615.55 | 55.18 | 618.02 | 414.90 | 208.09 |
| 630 | 5°02.4′ | 15°52.56′ | 314.20 | 14.51 | 625.18 | 57.87 | 627.85 | 421.70 | 211.55 |
| 640 | 5°07.2′ | 16°23.04′ | 319.13 | 15.21 | 634.79 | 60.65 | 637.68 | 428.51 | 215.01 |
| 650 | 5°12.0′ | 16°54.00′ | 324.06 | 15.93 | 644.37 | 63.51 | 647.49 | 435.32 | 218.48 |
| 660 | 5°16.8′ | 17°25.44′ | 328.99 | 16.67 | 653.92 | 66.46 | 657.29 | 442.15 | 221.96 |
| 670 | 5°21.6′ | 17°57.36′ | 333.91 | 17.44 | 663.45 | 69.50 | 667.08 | 448.99 | 225.44 |
| 680 | 5°26.4′ | 18°29.76′ | 338.82 | 18.22 | 672.95 | 72.63 | 676.86 | 455.83 | 228.94 |
| 690 | 5°31.2′ | 19°02.64′ | 343.73 | 19.04 | 682.42 | 75.85 | 686.62 | 462.69 | 232.45 |
| 700 | 5°36.0′ | 19°36.00′ | 348.64 | 19.87 | 691.85 | 79.15 | 696.37 | 469.56 | 235.97 |
| 710 | 5°40.8′ | 20°09.84′ | 353.54 | 20.73 | 701.26 | 82.56 | 706.10 | 476.44 | 239.49 |
| 720 | 5°45.6′ | 20°44.16′ | 358.43 | 21.61 | 710.63 | 86.05 | 715.82 | 483.34 | 243.03 |
| 730 | 5°50.4′ | 21°18.96′ | 363.32 | 22.52 | 719.96 | 89.64 | 725.52 | 490.24 | 246.59 |
| 740 | 5°55.2′ | 21°54.24′ | 368.20 | 23.45 | 729.26 | 93.32 | 735.20 | 497.16 | 250.15 |
| 750 | 6°00.0′ | 22°30.00′ | 373.08 | 24.41 | 738.52 | 97.10 | 744.87 | 504.10 | 253.73 |
| 760 | 6°04.8′ | 23°06.24′ | 377.95 | 25.39 | 747.73 | 100.97 | 754.52 | 511.05 | 257.32 |
| 770 | 6°09.6′ | 23°42.96′ | 382.81 | 26.40 | 756.91 | 104.95 | 764.15 | 518.02 | 260.93 |
| 780 | 6°14.4′ | 24°20.16′ | 387.67 | 27.43 | 766.05 | 109.02 | 773.76 | 525.00 | 264.55 |
| 790 | 6°19.2′ | 24°57.84′ | 392.51 | 28.49 | 775.13 | 113.19 | 783.35 | 532.00 | 268.19 |
| 800 | 6°24.0′ | 25°36.00′ | 397.35 | 29.58 | 784.18 | 117.46 | 792.92 | 539.02 | 271.84 |
| 810 | 6°28.8′ | 26°14.64′ | 402.18 | 30.69 | 793.17 | 121.83 | 802.47 | 546.06 | 275.51 |
| 820 | 6°33.6′ | 26°53.76′ | 407.01 | 31.83 | 802.11 | 126.30 | 812.00 | 553.11 | 279.20 |
| 830 | 6°38.4′ | 27°33.36′ | 411.82 | 32.99 | 811.01 | 130.88 | 821.50 | 560.19 | 282.91 |
| 840 | 6°43.2′ | 28°13.44′ | 416.63 | 34.18 | 819.84 | 135.56 | 830.98 | 567.29 | 286.64 |
| 850 | 6°48.0′ | 28°54.00′ | 421.42 | 35.41 | 828.63 | 140.34 | 840.43 | 574.41 | 290.38 |
| 860 | 6°52.8′ | 29°35.04′ | 426.21 | 36.65 | 837.35 | 145.22 | 849.85 | 581.55 | 294.15 |
| 870 | 6°57.6′ | 30°16.56′ | 430.98 | 37.93 | 846.02 | 150.21 | 859.25 | 588.72 | 297.94 |
| 880 | 7°02.4′ | 30°58.56′ | 435.75 | 39.24 | 854.62 | 155.31 | 868.62 | 595.91 | 301.75 |
| 890 | 7°07.2′ | 31°41.04′ | 440.50 | 40.57 | 863.17 | 160.51 | 877.96 | 603.12 | 305.59 |
| 900 | 7°12.0′ | 32°24.00′ | 445.25 | 41.93 | 871.64 | 165.81 | 887.27 | 610.37 | 309.45 |
| 910 | 7°16.8′ | 33°07.44′ | 449.98 | 43.32 | 880.05 | 171.22 | 896.55 | 617.64 | 313.33 |
| 920 | 7°21.6′ | 33°51.36′ | 454.70 | 44.74 | 888.39 | 176.74 | 905.80 | 624.94 | 317.24 |
| 930 | 7°26.4′ | 34°35.76′ | 459.41 | 46.19 | 896.66 | 182.36 | 915.02 | 632.27 | 321.18 |
| 940 | 7°31.2′ | 35°20.64′ | 464.10 | 47.67 | 904.86 | 188.10 | 924.20 | 639.63 | 325.15 |
| 950 | 7°36.0′ | 36°06.00′ | 468.78 | 49.18 | 912.97 | 193.93 | 933.34 | 647.02 | 329.15 |
| 960 | 7°40.8′ | 36°51.84′ | 473.45 | 50.72 | 921.01 | 199.88 | 942.45 | 654.45 | 333.18 |
| 970 | 7°45.6′ | 37°38.16′ | 478.11 | 52.29 | 928.97 | 205.93 | 951.53 | 661.91 | 337.24 |
| 980 | 7°50.4′ | 38°24.96′ | 482.75 | 53.89 | 936.85 | 212.09 | 960.56 | 669.41 | 341.33 |
| 990 | 7°55.2′ | 39°12.24′ | 487.37 | 55.52 | 944.64 | 218.36 | 969.55 | 676.95 | 345.46 |
| 1000 | 8°00.0′ | 40°00.00′ | 491.99 | 57.18 | 952.35 | 224.73 | 978.51 | 684.52 | 349.62 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.9

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°05.4′ | 0°00.27′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°10.8′ | 0°01.08′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°16.2′ | 0°02.43′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°21.6′ | 0°04.32′ | 20.00 | 0.00 | 40.00 | 0.02 | 40.00 | 26.67 | 13.33 |
| 50 | 0°27.0′ | 0°06.75′ | 25.00 | 0.01 | 50.00 | 0.03 | 50.00 | 33.33 | 16.67 |
| 60 | 0°32.4′ | 0°09.72′ | 30.00 | 0.01 | 60.00 | 0.06 | 60.00 | 40.00 | 20.00 |
| 70 | 0°37.8′ | 0°13.23′ | 35.00 | 0.02 | 70.00 | 0.09 | 70.00 | 46.67 | 23.33 |
| 80 | 0°43.2′ | 0°17.28′ | 40.00 | 0.03 | 80.00 | 0.13 | 80.00 | 53.33 | 26.67 |
| 90 | 0°48.6′ | 0°21.87′ | 45.00 | 0.05 | 90.00 | 0.19 | 90.00 | 60.00 | 30.00 |
| 100 | 0°54.0′ | 0°27.00′ | 50.00 | 0.07 | 100.00 | 0.26 | 100.00 | 66.67 | 33.33 |
| 110 | 0°59.4′ | 0°32.67′ | 55.00 | 0.09 | 110.00 | 0.35 | 110.00 | 73.33 | 36.67 |
| 120 | 1°04.8′ | 0°38.88′ | 60.00 | 0.11 | 120.00 | 0.45 | 120.00 | 80.00 | 40.00 |
| 130 | 1°10.2′ | 0°45.63′ | 65.00 | 0.14 | 130.00 | 0.58 | 130.00 | 86.67 | 43.33 |
| 140 | 1°15.6′ | 0°52.92′ | 70.00 | 0.18 | 140.00 | 0.72 | 140.00 | 93.33 | 46.67 |
| 150 | 1°21.0′ | 1°00.75′ | 75.00 | 0.22 | 150.00 | 0.88 | 150.00 | 100.00 | 50.00 |
| 160 | 1°26.4′ | 1°09.12′ | 80.00 | 0.27 | 159.99 | 1.07 | 160.00 | 106.67 | 53.34 |
| 170 | 1°31.8′ | 1°18.03′ | 85.00 | 0.32 | 169.99 | 1.29 | 170.00 | 113.34 | 56.67 |
| 180 | 1°37.2′ | 1°27.48′ | 90.00 | 0.38 | 179.99 | 1.53 | 179.99 | 120.00 | 60.00 |
| 190 | 1°42.6′ | 1°37.47′ | 95.00 | 0.45 | 189.98 | 1.80 | 189.99 | 126.67 | 63.34 |
| 200 | 1°48.0′ | 1°48.00′ | 100.00 | 0.52 | 199.98 | 2.09 | 199.99 | 133.34 | 66.67 |
| 210 | 1°53.4′ | 1°59.07′ | 105.00 | 0.61 | 209.97 | 2.42 | 209.99 | 140.01 | 70.01 |
| 220 | 1°58.8′ | 2°10.68′ | 109.99 | 0.70 | 219.97 | 2.79 | 219.99 | 146.68 | 73.34 |
| 230 | 2°04.2′ | 2°22.83′ | 114.99 | 0.80 | 229.96 | 3.18 | 229.98 | 153.35 | 76.68 |
| 240 | 2°09.6′ | 2°35.52′ | 119.99 | 0.90 | 239.95 | 3.62 | 239.98 | 160.02 | 80.02 |
| 250 | 2°15.0′ | 2°48.75′ | 124.99 | 1.02 | 249.94 | 4.09 | 249.97 | 166.69 | 83.35 |
| 260 | 2°20.4′ | 3°02.52′ | 129.99 | 1.15 | 259.93 | 4.60 | 259.97 | 173.36 | 86.69 |
| 270 | 2°25.8′ | 3°16.83′ | 134.99 | 1.29 | 269.91 | 5.15 | 269.96 | 180.03 | 90.03 |
| 280 | 2°31.2′ | 3°31.68′ | 139.98 | 1.44 | 279.89 | 5.75 | 279.95 | 186.70 | 93.37 |
| 290 | 2°36.6′ | 3°47.07′ | 144.98 | 1.60 | 289.87 | 6.38 | 289.94 | 193.38 | 96.71 |
| 300 | 2°42.0′ | 4°03.00′ | 149.98 | 1.77 | 299.85 | 7.07 | 299.93 | 200.05 | 100.05 |
| 310 | 2°47.4′ | 4°19.47′ | 154.97 | 1.95 | 309.82 | 7.80 | 309.92 | 206.73 | 103.39 |
| 320 | 2°52.8′ | 4°36.48′ | 159.97 | 2.14 | 319.79 | 8.57 | 319.91 | 213.41 | 106.73 |
| 330 | 2°58.2′ | 4°54.03′ | 164.96 | 2.35 | 329.76 | 9.40 | 329.89 | 220.08 | 110.08 |
| 340 | 3°03.6′ | 5°12.12′ | 169.95 | 2.57 | 339.72 | 10.28 | 339.88 | 226.76 | 113.42 |
| 350 | 3°09.0′ | 5°30.75′ | 174.95 | 2.81 | 349.68 | 11.22 | 349.86 | 233.45 | 116.77 |
| 360 | 3°14.4′ | 5°49.92′ | 179.94 | 3.05 | 359.63 | 12.21 | 359.83 | 240.13 | 120.12 |
| 370 | 3°19.8′ | 6°09.63′ | 184.93 | 3.31 | 369.57 | 13.25 | 369.81 | 246.82 | 123.47 |
| 380 | 3°25.2′ | 6°29.88′ | 189.92 | 3.59 | 379.51 | 14.35 | 379.78 | 253.50 | 126.82 |
| 390 | 3°30.6′ | 6°50.67′ | 194.91 | 3.88 | 389.44 | 15.51 | 389.75 | 260.19 | 130.18 |
| 400 | 3°36.0′ | 7°12.00′ | 199.89 | 4.19 | 399.37 | 16.74 | 399.72 | 266.89 | 133.53 |
| 410 | 3°41.4′ | 7°33.87′ | 204.88 | 4.51 | 409.29 | 18.02 | 409.68 | 273.58 | 136.89 |
| 420 | 3°46.8′ | 7°56.28′ | 209.87 | 4.85 | 419.19 | 19.37 | 419.64 | 280.28 | 140.26 |
| 430 | 3°52.2′ | 8°19.23′ | 214.85 | 5.20 | 429.09 | 20.78 | 429.60 | 286.98 | 143.62 |
| 440 | 3°57.6′ | 8°42.72′ | 219.83 | 5.57 | 438.98 | 22.26 | 439.55 | 293.69 | 146.99 |
| 450 | 4°03.0′ | 9°06.75′ | 224.81 | 5.96 | 448.86 | 23.81 | 449.49 | 300.40 | 150.36 |
| 460 | 4°08.4′ | 9°31.32′ | 229.79 | 6.36 | 458.73 | 25.43 | 459.44 | 307.11 | 153.74 |
| 470 | 4°13.8′ | 9°56.43′ | 234.76 | 6.79 | 468.59 | 27.12 | 469.37 | 313.83 | 157.12 |
| 480 | 4°19.2′ | 10°22.08′ | 239.74 | 7.23 | 478.43 | 28.89 | 479.30 | 320.55 | 160.50 |
| 490 | 4°24.6′ | 10°48.27′ | 244.71 | 7.69 | 488.26 | 30.72 | 489.23 | 327.28 | 163.89 |
| 500 | 4°30.0′ | 11°15.00′ | 249.68 | 8.17 | 498.08 | 32.63 | 499.14 | 334.01 | 167.28 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 0.9—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 4°35.4′ | 11°42.27′ | 254.65 | 8.67 | 507.88 | 34.62 | 509.05 | 340.75 | 170.68 |
| 520 | 4°40.8′ | 12°10.08′ | 259.61 | 9.19 | 517.66 | 36.69 | 518.96 | 347.49 | 174.08 |
| 530 | 4°46.2′ | 12°38.43′ | 264.57 | 9.73 | 527.43 | 38.84 | 528.85 | 354.24 | 177.49 |
| 540 | 4°51.6′ | 13°07.32′ | 269.53 | 10.29 | 537.17 | 41.07 | 538.74 | 360.99 | 180.90 |
| 550 | 4°57.0′ | 13°36.75′ | 274.48 | 10.87 | 546.90 | 43.38 | 548.62 | 367.76 | 184.32 |
| 560 | 5°02.4′ | 14°06.72′ | 279.43 | 11.47 | 556.61 | 45.78 | 558.49 | 374.53 | 187.75 |
| 570 | 5°07.8′ | 14°37.23′ | 284.38 | 12.09 | 566.30 | 48.26 | 568.35 | 381.30 | 191.19 |
| 580 | 5°13.2′ | 15°08.28′ | 289.33 | 12.74 | 575.96 | 50.83 | 578.20 | 388.09 | 194.63 |
| 590 | 5°18.6′ | 15°39.87′ | 294.27 | 13.41 | 585.61 | 53.48 | 588.04 | 394.88 | 198.08 |
| 600 | 5°24.0′ | 16°12.00′ | 299.20 | 14.10 | 595.22 | 56.23 | 597.87 | 401.69 | 201.54 |
| 610 | 5°29.4′ | 16°44.67′ | 304.13 | 14.81 | 604.81 | 59.06 | 607.69 | 408.50 | 205.00 |
| 620 | 5°34.8′ | 17°17.88′ | 309.06 | 15.55 | 614.37 | 61.99 | 617.49 | 415.32 | 208.48 |
| 630 | 5°40.2′ | 17°51.63′ | 313.98 | 16.31 | 623.91 | 65.01 | 627.28 | 422.16 | 211.96 |
| 640 | 5°45.6′ | 18°25.92′ | 318.90 | 17.09 | 633.41 | 68.12 | 637.06 | 429.00 | 215.46 |
| 650 | 5°51.0′ | 19°00.75′ | 323.81 | 17.90 | 642.88 | 71.33 | 646.82 | 435.86 | 218.96 |
| 660 | 5°56.4′ | 19°36.12′ | 328.72 | 18.74 | 652.32 | 74.64 | 656.57 | 442.73 | 222.48 |
| 670 | 6°01.8′ | 20°12.03′ | 333.62 | 19.60 | 661.72 | 78.04 | 666.31 | 449.61 | 226.01 |
| 680 | 6°07.2′ | 20°48.48′ | 338.51 | 20.48 | 671.09 | 81.55 | 676.02 | 456.51 | 229.55 |
| 690 | 6°12.6′ | 21°25.47′ | 343.40 | 21.39 | 680.41 | 85.15 | 685.72 | 463.41 | 233.11 |
| 700 | 6°18.0′ | 22°03.00′ | 348.28 | 22.33 | 689.70 | 88.85 | 695.40 | 470.34 | 236.68 |
| 710 | 6°23.4′ | 22°41.07′ | 353.15 | 23.29 | 698.95 | 92.66 | 705.07 | 477.28 | 240.26 |
| 720 | 6°28.8′ | 23°19.68′ | 358.02 | 24.28 | 708.16 | 96.57 | 714.71 | 484.24 | 243.85 |
| 730 | 6°34.2′ | 23°58.83′ | 362.88 | 25.30 | 717.32 | 100.58 | 724.33 | 491.21 | 247.47 |
| 740 | 6°39.6′ | 24°38.52′ | 367.73 | 26.35 | 726.43 | 104.69 | 733.93 | 498.20 | 251.10 |
| 750 | 6°45.0′ | 25°18.75′ | 372.57 | 27.42 | 735.49 | 108.92 | 743.51 | 505.21 | 254.74 |
| 760 | 6°50.4′ | 25°59.52′ | 377.41 | 28.52 | 744.51 | 113.25 | 753.07 | 512.24 | 258.41 |
| 770 | 6°55.8′ | 26°40.83′ | 382.23 | 29.65 | 753.47 | 117.68 | 762.60 | 519.29 | 262.09 |
| 780 | 7°01.2′ | 27°22.68′ | 387.05 | 30.81 | 762.38 | 122.23 | 772.11 | 526.36 | 265.79 |
| 790 | 7°06.6′ | 28°05.07′ | 391.86 | 31.99 | 771.23 | 126.88 | 781.60 | 533.45 | 269.51 |
| 800 | 7°12.0′ | 28°48.00′ | 396.65 | 33.21 | 780.02 | 131.64 | 791.05 | 540.57 | 273.25 |
| 810 | 7°17.4′ | 29°31.47′ | 401.44 | 34.45 | 788.75 | 136.51 | 800.48 | 547.71 | 277.02 |
| 820 | 7°22.8′ | 30°15.48′ | 406.22 | 35.73 | 797.42 | 141.50 | 809.88 | 554.87 | 280.81 |
| 830 | 7°28.2′ | 31°00.03′ | 410.98 | 37.03 | 806.03 | 146.59 | 819.25 | 562.06 | 284.62 |
| 840 | 7°33.6′ | 31°45.12′ | 415.74 | 38.37 | 814.57 | 151.80 | 828.59 | 569.28 | 288.46 |
| 850 | 7°39.0′ | 32°30.75′ | 420.48 | 39.74 | 823.04 | 157.12 | 837.90 | 576.53 | 292.32 |
| 860 | 7°44.4′ | 33°16.92′ | 425.21 | 41.13 | 831.43 | 162.55 | 847.17 | 583.81 | 296.21 |
| 870 | 7°49.8′ | 34°03.63′ | 429.93 | 42.56 | 839.75 | 168.09 | 856.41 | 591.11 | 300.13 |
| 880 | 7°55.2′ | 34°50.88′ | 434.63 | 44.02 | 848.00 | 173.75 | 865.62 | 598.45 | 304.08 |
| 890 | 8°00.6′ | 35°38.67′ | 439.32 | 45.51 | 856.17 | 179.52 | 874.78 | 605.83 | 308.06 |
| 900 | 8°06.0′ | 36°27.00′ | 444.00 | 47.03 | 864.25 | 185.41 | 883.92 | 613.23 | 312.07 |
| 910 | 8°11.4′ | 37°15.87′ | 448.66 | 48.58 | 872.25 | 191.40 | 893.01 | 620.68 | 316.11 |
| 920 | 8°16.8′ | 38°05.28′ | 453.31 | 50.17 | 880.17 | 197.52 | 902.06 | 628.16 | 320.19 |
| 930 | 8°22.2′ | 38°55.23′ | 457.94 | 51.79 | 887.99 | 203.74 | 911.07 | 635.68 | 324.30 |
| 940 | 8°27.6′ | 39°45.72′ | 462.55 | 53.44 | 895.73 | 210.08 | 920.03 | 643.24 | 328.45 |
| 950 | 8°33.0′ | 40°36.75′ | 467.15 | 55.12 | 903.37 | 216.53 | 928.96 | 650.85 | 332.65 |
| 960 | 8°38.4′ | 41°28.32′ | 471.74 | 56.83 | 910.91 | 223.10 | 937.83 | 658.49 | 336.88 |
| 970 | 8°43.8′ | 42°20.43′ | 476.30 | 58.58 | 918.35 | 229.78 | 946.66 | 666.19 | 341.15 |
| 980 | 8°49.2′ | 43°13.08′ | 480.85 | 60.36 | 925.69 | 236.57 | 955.44 | 673.93 | 345.47 |
| 990 | 8°54.6′ | 44°06.27′ | 485.38 | 62.18 | 932.93 | 243.47 | 964.17 | 681.72 | 349.83 |
| 1000 | 9°00.0′ | 45°00.00′ | 489.89 | 64.03 | 940.05 | 250.49 | 972.85 | 689.56 | 354.24 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 1.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°06.0′ | 0°00.30′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°12.0′ | 0°01.20′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°18.0′ | 0°02.70′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°24.0′ | 0°04.80′ | 20.00 | 0.00 | 40.00 | 0.02 | 40.00 | 26.67 | 13.33 |
| 50 | 0°30.0′ | 0°07.50′ | 25.00 | 0.01 | 50.00 | 0.04 | 50.00 | 33.33 | 16.67 |
| 60 | 0°36.0′ | 0°10.80′ | 30.00 | 0.02 | 60.00 | 0.06 | 60.00 | 40.00 | 20.00 |
| 70 | 0°42.0′ | 0°14.70′ | 35.00 | 0.02 | 70.00 | 0.10 | 70.00 | 46.67 | 23.33 |
| 80 | 0°48.0′ | 0°19.20′ | 40.00 | 0.04 | 80.00 | 0.15 | 80.00 | 53.33 | 26.67 |
| 90 | 0°54.0′ | 0°24.30′ | 45.00 | 0.05 | 90.00 | 0.21 | 90.00 | 60.00 | 30.00 |
| 100 | 1°00.0′ | 0°30.00′ | 50.00 | 0.07 | 100.00 | 0.29 | 100.00 | 66.67 | 33.33 |
| 110 | 1°06.0′ | 0°36.30′ | 55.00 | 0.10 | 110.00 | 0.39 | 110.00 | 73.33 | 36.67 |
| 120 | 1°12.0′ | 0°43.20′ | 60.00 | 0.13 | 120.00 | 0.50 | 120.00 | 80.00 | 40.00 |
| 130 | 1°18.0′ | 0°50.70′ | 65.00 | 0.16 | 130.00 | 0.64 | 130.00 | 86.67 | 43.33 |
| 140 | 1°24.0′ | 0°58.80′ | 70.00 | 0.20 | 140.00 | 0.80 | 140.00 | 93.33 | 46.67 |
| 150 | 1°30.0′ | 1°07.50′ | 75.00 | 0.25 | 149.99 | 0.98 | 150.00 | 100.00 | 50.00 |
| 160 | 1°36.0′ | 1°16.80′ | 80.00 | 0.30 | 159.99 | 1.19 | 160.00 | 106.67 | 53.34 |
| 170 | 1°42.0′ | 1°26.70′ | 85.00 | 0.36 | 169.99 | 1.43 | 170.00 | 113.34 | 56.67 |
| 180 | 1°48.0′ | 1°37.20′ | 90.00 | 0.42 | 179.99 | 1.70 | 179.99 | 120.01 | 60.00 |
| 190 | 1°54.0′ | 1°48.30′ | 95.00 | 0.50 | 189.98 | 2.00 | 189.99 | 126.67 | 63.34 |
| 200 | 2°00.0′ | 2°00.00′ | 100.00 | 0.58 | 199.98 | 2.33 | 199.99 | 133.34 | 66.67 |
| 210 | 2°06.0′ | 2°12.30′ | 104.99 | 0.67 | 209.97 | 2.69 | 209.99 | 140.01 | 70.01 |
| 220 | 2°12.0′ | 2°25.20′ | 109.99 | 0.77 | 219.96 | 3.10 | 219.98 | 146.68 | 73.35 |
| 230 | 2°18.0′ | 2°38.70′ | 114.99 | 0.88 | 229.95 | 3.54 | 229.98 | 153.35 | 76.68 |
| 240 | 2°24.0′ | 2°52.80′ | 119.99 | 1.01 | 239.94 | 4.02 | 239.97 | 160.02 | 80.02 |
| 250 | 2°30.0′ | 3°07.50′ | 124.99 | 1.14 | 249.93 | 4.54 | 249.97 | 166.69 | 83.36 |
| 260 | 2°36.0′ | 3°22.80′ | 129.98 | 1.28 | 259.91 | 5.11 | 259.96 | 173.36 | 86.70 |
| 270 | 2°42.0′ | 3°38.70′ | 134.98 | 1.43 | 269.89 | 5.72 | 269.95 | 180.04 | 90.03 |
| 280 | 2°48.0′ | 3°55.20′ | 139.98 | 1.60 | 279.87 | 6.38 | 279.94 | 186.71 | 93.37 |
| 290 | 2°54.0′ | 4°12.30′ | 144.97 | 1.77 | 289.84 | 7.09 | 289.93 | 193.39 | 96.72 |
| 300 | 3°00.0′ | 4°30.00′ | 149.97 | 1.96 | 299.81 | 7.85 | 299.92 | 200.06 | 100.06 |
| 310 | 3°06.0′ | 4°48.30′ | 154.96 | 2.17 | 309.78 | 8.66 | 309.90 | 206.74 | 103.40 |
| 320 | 3°12.0′ | 5°07.20′ | 159.96 | 2.38 | 319.74 | 9.53 | 319.89 | 213.42 | 106.75 |
| 330 | 3°18.0′ | 5°26.70′ | 164.95 | 2.61 | 329.70 | 10.45 | 329.87 | 220.10 | 110.09 |
| 340 | 3°24.0′ | 5°46.80′ | 169.94 | 2.86 | 339.65 | 11.42 | 339.85 | 226.79 | 113.44 |
| 350 | 3°30.0′ | 6°07.50′ | 174.93 | 3.12 | 349.60 | 12.46 | 349.82 | 233.47 | 116.79 |
| 360 | 3°36.0′ | 6°28.80′ | 179.92 | 3.39 | 359.54 | 13.56 | 359.80 | 240.16 | 120.15 |
| 370 | 3°42.0′ | 6°50.70′ | 184.91 | 3.68 | 369.47 | 14.72 | 369.77 | 246.85 | 123.50 |
| 380 | 3°48.0′ | 7°13.20′ | 189.90 | 3.99 | 379.40 | 15.94 | 379.73 | 253.54 | 126.86 |
| 390 | 3°54.0′ | 7°36.30′ | 194.89 | 4.31 | 389.31 | 17.23 | 389.69 | 260.24 | 130.22 |
| 400 | 4°00.0′ | 8°00.00′ | 199.87 | 4.65 | 399.22 | 18.59 | 399.65 | 266.94 | 133.58 |
| 410 | 4°06.0′ | 8°24.30′ | 204.85 | 5.01 | 409.12 | 20.02 | 409.61 | 273.64 | 136.95 |
| 420 | 4°12.0′ | 8°49.20′ | 209.83 | 5.38 | 419.01 | 21.51 | 419.56 | 280.35 | 140.32 |
| 430 | 4°18.0′ | 9°14.70′ | 214.81 | 5.78 | 428.88 | 23.08 | 429.50 | 287.06 | 143.69 |
| 440 | 4°24.0′ | 9°40.80′ | 219.79 | 6.19 | 438.75 | 24.73 | 439.44 | 293.77 | 147.07 |
| 450 | 4°30.0′ | 10°07.50′ | 224.77 | 6.62 | 448.60 | 26.45 | 449.38 | 300.49 | 150.45 |
| 460 | 4°36.0′ | 10°34.80′ | 229.74 | 7.07 | 458.43 | 28.25 | 459.30 | 307.22 | 153.83 |
| 470 | 4°42.0′ | 11°02.70′ | 234.71 | 7.54 | 468.26 | 30.12 | 469.22 | 313.95 | 157.22 |
| 480 | 4°48.0′ | 11°31.20′ | 239.68 | 8.03 | 478.06 | 32.08 | 479.14 | 320.68 | 160.62 |
| 490 | 4°54.0′ | 12°00.30′ | 244.64 | 8.54 | 487.85 | 34.12 | 489.04 | 327.42 | 164.02 |
| 500 | 5°00.0′ | 12°30.00′ | 249.60 | 9.07 | 497.63 | 36.24 | 498.94 | 334.17 | 167.43 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1.0—Continued

| L | D | S | q | p | x | y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 5°06.0′ | 13°00.30′ | 254.56 | 9.63 | 507.38 | 38.44 | 508.83 | 340.92 | 170.84 |
| 520 | 5°12.0′ | 13°31.20′ | 259.52 | 10.20 | 517.11 | 40.74 | 518.71 | 347.68 | 174.26 |
| 530 | 5°18.0′ | 14°02.70′ | 264.47 | 10.80 | 526.82 | 43.12 | 528.59 | 354.45 | 177.68 |
| 540 | 5°24.0′ | 14°34.80′ | 269.42 | 11.42 | 536.51 | 45.59 | 538.45 | 361.23 | 181.12 |
| 550 | 5°30.0′ | 15°07.50′ | 274.36 | 12.07 | 546.18 | 48.16 | 548.30 | 368.01 | 184.56 |
| 560 | 5°36.0′ | 15°40.80′ | 279.30 | 12.74 | 555.82 | 50.81 | 558.14 | 374.81 | 188.01 |
| 570 | 5°42.0′ | 16°14.70′ | 284.24 | 13.43 | 565.43 | 53.56 | 567.97 | 381.61 | 191.47 |
| 580 | 5°48.0′ | 16°49.20′ | 289.17 | 14.15 | 575.02 | 56.41 | 577.78 | 388.43 | 194.93 |
| 590 | 5°54.0′ | 17°24.30′ | 294.09 | 14.89 | 584.58 | 59.35 | 587.58 | 395.25 | 198.41 |
| 600 | 6°00.0′ | 18°00.00′ | 299.02 | 15.65 | 594.11 | 62.39 | 597.37 | 402.09 | 201.90 |
| 610 | 6°06.0′ | 18°36.30′ | 303.93 | 16.44 | 603.60 | 65.53 | 607.15 | 408.94 | 205.40 |
| 620 | 6°12.0′ | 19°13.20′ | 308.84 | 17.26 | 613.06 | 68.77 | 616.90 | 415.80 | 208.91 |
| 630 | 6°18.0′ | 19°50.70′ | 313.74 | 18.11 | 622.48 | 72.11 | 626.65 | 422.67 | 212.43 |
| 640 | 6°24.0′ | 20°28.80′ | 318.64 | 18.98 | 631.87 | 75.56 | 636.37 | 429.56 | 215.96 |
| 650 | 6°30.0′ | 21°07.50′ | 323.53 | 19.87 | 641.22 | 79.11 | 646.08 | 436.46 | 219.51 |
| 660 | 6°36.0′ | 21°46.80′ | 328.42 | 20.80 | 650.53 | 82.77 | 655.77 | 443.38 | 223.07 |
| 670 | 6°42.0′ | 22°26.70′ | 333.29 | 21.75 | 659.79 | 86.53 | 665.44 | 450.31 | 226.65 |
| 680 | 6°48.0′ | 23°07.20′ | 338.16 | 22.73 | 669.01 | 90.41 | 675.09 | 457.26 | 230.24 |
| 690 | 6°54.0′ | 23°48.30′ | 343.02 | 23.74 | 678.18 | 94.39 | 684.72 | 464.23 | 233.85 |
| 700 | 7°00.0′ | 24°30.00′ | 347.88 | 24.78 | 687.31 | 98.48 | 694.33 | 471.22 | 237.47 |
| 710 | 7°06.0′ | 25°12.30′ | 352.72 | 25.85 | 696.38 | 102.68 | 703.91 | 478.22 | 241.12 |
| 720 | 7°12.0′ | 25°55.20′ | 357.56 | 26.95 | 705.40 | 107.00 | 713.47 | 485.25 | 244.78 |
| 730 | 7°18.0′ | 26°38.70′ | 362.38 | 28.07 | 714.37 | 111.42 | 723.01 | 492.30 | 248.46 |
| 740 | 7°24.0′ | 27°22.80′ | 367.20 | 29.23 | 723.28 | 115.97 | 732.52 | 499.37 | 252.16 |
| 750 | 7°30.0′ | 28°07.50′ | 372.01 | 30.42 | 732.13 | 120.62 | 742.00 | 506.46 | 255.88 |
| 760 | 7°36.0′ | 28°52.80′ | 376.80 | 31.64 | 740.92 | 125.39 | 751.45 | 513.58 | 259.63 |
| 770 | 7°42.0′ | 29°38.70′ | 381.59 | 32.88 | 749.64 | 130.28 | 760.88 | 520.72 | 263.40 |
| 780 | 7°48.0′ | 30°25.20′ | 386.36 | 34.17 | 758.30 | 135.29 | 770.27 | 527.89 | 267.19 |
| 790 | 7°54.0′ | 31°12.30′ | 391.13 | 35.48 | 766.89 | 140.41 | 779.63 | 535.09 | 271.01 |
| 800 | 8°00.0′ | 32°00.00′ | 395.88 | 36.82 | 775.40 | 145.65 | 788.96 | 542.32 | 274.85 |
| 810 | 8°06.0′ | 32°48.30′ | 400.61 | 38.20 | 783.85 | 151.01 | 798.26 | 549.57 | 278.72 |
| 820 | 8°12.0′ | 33°37.20′ | 405.34 | 39.61 | 792.21 | 156.48 | 807.52 | 556.86 | 282.63 |
| 830 | 8°18.0′ | 34°26.70′ | 410.05 | 41.05 | 800.50 | 162.08 | 816.74 | 564.18 | 286.56 |
| 840 | 8°24.0′ | 35°16.80′ | 414.75 | 42.52 | 808.71 | 167.80 | 825.93 | 571.54 | 290.52 |
| 850 | 8°30.0′ | 36°07.50′ | 419.43 | 44.03 | 816.83 | 173.63 | 835.08 | 578.93 | 294.52 |
| 860 | 8°36.0′ | 36°58.80′ | 424.10 | 45.57 | 824.86 | 179.59 | 844.18 | 586.36 | 298.55 |
| 870 | 8°42.0′ | 37°50.70′ | 428.75 | 47.15 | 832.80 | 185.66 | 853.25 | 593.83 | 302.62 |
| 880 | 8°48.0′ | 38°43.20′ | 433.39 | 48.76 | 840.65 | 191.86 | 862.27 | 601.34 | 306.72 |
| 890 | 8°54.0′ | 39°36.30′ | 438.01 | 50.40 | 848.41 | 198.17 | 871.24 | 608.90 | 310.87 |
| 900 | 9°00.0′ | 40°30.00′ | 442.61 | 52.08 | 856.06 | 204.61 | 880.17 | 616.49 | 315.05 |
| 910 | 9°06.0′ | 41°24.30′ | 447.19 | 53.79 | 863.61 | 211.16 | 889.05 | 624.14 | 319.28 |
| 920 | 9°12.0′ | 42°19.20′ | 451.76 | 55.54 | 871.06 | 217.84 | 897.89 | 631.83 | 323.55 |
| 930 | 9°18.0′ | 43°14.70′ | 456.31 | 57.32 | 878.40 | 224.63 | 906.67 | 639.57 | 327.87 |
| 940 | 9°24.0′ | 44°10.80′ | 460.84 | 59.14 | 885.63 | 231.54 | 915.39 | 647.37 | 332.23 |
| 950 | 9°30.0′ | 45°07.50′ | 465.35 | 60.99 | 892.74 | 238.57 | 924.07 | 655.21 | 336.65 |
| 960 | 9°36.0′ | 46°04.80′ | 469.83 | 62.87 | 899.74 | 245.71 | 932.69 | 663.12 | 341.12 |
| 970 | 9°42.0′ | 47°02.70′ | 474.30 | 64.80 | 906.61 | 252.97 | 941.25 | 671.08 | 345.64 |
| 980 | 9°48.0′ | 48°01.20′ | 478.75 | 66.75 | 913.37 | 260.35 | 949.75 | 679.11 | 350.22 |
| 990 | 9°54.0′ | 49°00.30′ | 483.17 | 68.75 | 919.99 | 267.84 | 958.19 | 687.20 | 354.86 |
| 1000 | 10°00.0′ | 50°00.00′ | 487.57 | 70.78 | 926.48 | 275.44 | 966.56 | 695.36 | 359.57 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 1.25

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°07.5′ | 0°00.38′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°15.0′ | 0°01.50′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°22.5′ | 0°03.38′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°30.0′ | 0°06.00′ | 20.00 | 0.01 | 40.00 | 0.02 | 40.00 | 26.67 | 13.33 |
| 50 | 0°37.5′ | 0°09.38′ | 25.00 | 0.01 | 50.00 | 0.05 | 50.00 | 33.33 | 16.67 |
| 60 | 0°45.0′ | 0°13.50′ | 30.00 | 0.02 | 60.00 | 0.08 | 60.00 | 40.00 | 20.00 |
| 70 | 0°52.5′ | 0°18.38′ | 35.00 | 0.03 | 70.00 | 0.12 | 70.00 | 46.67 | 23.33 |
| 80 | 1°00.0′ | 0°24.00′ | 40.00 | 0.05 | 80.00 | 0.19 | 80.00 | 53.33 | 26.67 |
| 90 | 1°07.5′ | 0°30.38′ | 45.00 | 0.07 | 90.00 | 0.27 | 90.00 | 60.00 | 30.00 |
| 100 | 1°15.0′ | 0°37.50′ | 50.00 | 0.09 | 100.00 | 0.36 | 100.00 | 66.67 | 33.33 |
| 110 | 1°22.5′ | 0°45.38′ | 55.00 | 0.12 | 110.00 | 0.48 | 110.00 | 73.33 | 36.67 |
| 120 | 1°30.0′ | 0°54.00′ | 60.00 | 0.16 | 120.00 | 0.63 | 120.00 | 80.00 | 40.00 |
| 130 | 1°37.5′ | 1°03.38′ | 65.00 | 0.20 | 130.00 | 0.80 | 130.00 | 86.67 | 43.33 |
| 140 | 1°45.0′ | 1°13.50′ | 70.00 | 0.25 | 139.99 | 1.00 | 140.00 | 93.34 | 46.67 |
| 150 | 1°52.5′ | 1°24.38′ | 75.00 | 0.31 | 149.99 | 1.23 | 150.00 | 100.00 | 50.00 |
| 160 | 2°00.0′ | 1°36.00′ | 80.00 | 0.37 | 159.99 | 1.49 | 159.99 | 106.67 | 53.34 |
| 170 | 2°07.5′ | 1°48.38′ | 85.00 | 0.45 | 169.98 | 1.79 | 169.99 | 113.34 | 56.67 |
| 180 | 2°15.0′ | 2°01.50′ | 90.00 | 0.53 | 179.98 | 2.12 | 179.99 | 120.01 | 60.01 |
| 190 | 2°22.5′ | 2°15.38′ | 95.00 | 0.62 | 189.97 | 2.49 | 189.99 | 126.68 | 63.34 |
| 200 | 2°30.0′ | 2°30.00′ | 99.99 | 0.73 | 199.96 | 2.91 | 199.98 | 133.35 | 66.68 |
| 210 | 2°37.5′ | 2°45.38′ | 104.99 | 0.84 | 209.95 | 3.37 | 209.98 | 140.02 | 70.02 |
| 220 | 2°45.0′ | 3°01.50′ | 109.99 | 0.97 | 219.94 | 3.87 | 219.97 | 146.69 | 73.35 |
| 230 | 2°52.5′ | 3°18.38′ | 114.99 | 1.11 | 229.92 | 4.42 | 229.97 | 153.36 | 76.69 |
| 240 | 3°00.0′ | 3°36.00′ | 119.98 | 1.26 | 239.91 | 5.03 | 239.96 | 160.03 | 80.03 |
| 250 | 3°07.5′ | 3°54.38′ | 124.98 | 1.42 | 249.88 | 5.68 | 249.95 | 166.71 | 83.37 |
| 260 | 3°15.0′ | 4°13.50′ | 129.98 | 1.60 | 259.86 | 6.39 | 259.94 | 173.38 | 86.71 |
| 270 | 3°22.5′ | 4°33.38′ | 134.97 | 1.79 | 269.83 | 7.15 | 269.92 | 180.06 | 90.05 |
| 280 | 3°30.0′ | 4°54.00′ | 139.97 | 1.99 | 279.80 | 7.98 | 279.91 | 186.74 | 93.40 |
| 290 | 3°37.5′ | 5°15.38′ | 144.96 | 2.22 | 289.76 | 8.86 | 289.89 | 193.42 | 96.74 |
| 300 | 3°45.0′ | 5°37.50′ | 149.95 | 2.45 | 299.71 | 9.81 | 299.87 | 200.10 | 100.09 |
| 310 | 3°52.5′ | 6°00.38′ | 154.94 | 2.71 | 309.66 | 10.82 | 309.85 | 206.79 | 103.44 |
| 320 | 4°00.0′ | 6°24.00′ | 159.93 | 2.98 | 319.60 | 11.90 | 319.82 | 213.47 | 106.79 |
| 330 | 4°07.5′ | 6°48.38′ | 164.92 | 3.27 | 329.53 | 13.05 | 329.79 | 220.16 | 110.15 |
| 340 | 4°15.0′ | 7°13.50′ | 169.91 | 3.57 | 339.46 | 14.28 | 339.76 | 226.86 | 113.51 |
| 350 | 4°22.5′ | 7°39.38′ | 174.90 | 3.89 | 349.38 | 15.57 | 349.72 | 233.55 | 116.87 |
| 360 | 4°30.0′ | 8°06.00′ | 179.88 | 4.24 | 359.28 | 16.94 | 359.68 | 240.25 | 120.23 |
| 370 | 4°37.5′ | 8°33.38′ | 184.86 | 4.60 | 369.18 | 18.39 | 369.63 | 246.96 | 123.60 |
| 380 | 4°45.0′ | 9°01.50′ | 189.84 | 4.98 | 379.06 | 19.92 | 379.58 | 253.66 | 126.97 |
| 390 | 4°52.5′ | 9°30.38′ | 194.82 | 5.39 | 388.93 | 21.53 | 389.52 | 260.38 | 130.34 |
| 400 | 5°00.0′ | 10°00.00′ | 199.80 | 5.81 | 398.78 | 23.22 | 399.46 | 267.09 | 133.72 |
| 410 | 5°07.5′ | 10°30.38′ | 204.77 | 6.26 | 408.62 | 25.00 | 409.39 | 273.82 | 137.11 |
| 420 | 5°15.0′ | 11°01.50′ | 209.74 | 6.73 | 418.45 | 26.87 | 419.31 | 280.54 | 140.50 |
| 430 | 5°22.5′ | 11°33.38′ | 214.71 | 7.22 | 428.25 | 28.83 | 429.22 | 287.28 | 143.89 |
| 440 | 5°30.0′ | 12°06.00′ | 219.67 | 7.73 | 438.04 | 30.88 | 439.13 | 294.02 | 147.29 |
| 450 | 5°37.5′ | 12°39.38′ | 224.63 | 8.27 | 447.81 | 33.02 | 449.02 | 300.77 | 150.70 |
| 460 | 5°45.0′ | 13°13.50′ | 229.59 | 8.83 | 457.56 | 35.26 | 458.91 | 307.53 | 154.12 |
| 470 | 5°52.5′ | 13°48.38′ | 234.55 | 9.42 | 467.28 | 37.59 | 468.79 | 314.29 | 157.54 |
| 480 | 6°00.0′ | 14°24.00′ | 239.50 | 10.03 | 476.98 | 40.03 | 478.65 | 321.07 | 160.97 |
| 490 | 6°07.5′ | 15°00.38′ | 244.44 | 10.67 | 486.65 | 42.57 | 488.51 | 327.85 | 164.41 |
| 500 | 6°15.0′ | 15°37.50′ | 249.38 | 11.33 | 496.29 | 45.21 | 498.35 | 334.64 | 167.86 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1.25—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 6°22.5′ | 16°15.38′ | 254.32 | 12.02 | 505.91 | 47.96 | 508.18 | 341.44 | 171.31 |
| 520 | 6°30.0′ | 16°54.00′ | 259.25 | 12.74 | 515.49 | 50.81 | 517.99 | 348.26 | 174.78 |
| 530 | 6°37.5′ | 17°33.38′ | 264.17 | 13.49 | 525.05 | 53.77 | 527.79 | 355.09 | 178.26 |
| 540 | 6°45.0′ | 18°13.50′ | 269.09 | 14.26 | 534.56 | 56.84 | 537.58 | 361.93 | 181.75 |
| 550 | 6°52.5′ | 18°54.38′ | 274.00 | 15.07 | 544.04 | 60.03 | 547.34 | 368.78 | 185.26 |
| 560 | 7°00.0′ | 19°36.00′ | 278.91 | 15.90 | 553.48 | 63.32 | 557.09 | 375.65 | 188.77 |
| 570 | 7°07.5′ | 20°18.38′ | 283.81 | 16.76 | 562.88 | 66.74 | 566.82 | 382.53 | 192.30 |
| 580 | 7°15.0′ | 21°01.50′ | 288.70 | 17.65 | 572.24 | 70.27 | 576.54 | 389.43 | 195.85 |
| 590 | 7°22.5′ | 21°45.38′ | 293.59 | 18.57 | 581.55 | 73.91 | 586.23 | 396.35 | 199.41 |
| 600 | 7°30.0′ | 22°30.00′ | 298.46 | 19.53 | 590.81 | 77.68 | 595.90 | 403.28 | 202.98 |
| 610 | 7°37.5′ | 23°15.38′ | 303.33 | 20.51 | 600.03 | 81.57 | 605.55 | 410.23 | 206.58 |
| 620 | 7°45.0′ | 24°01.50′ | 308.19 | 21.53 | 609.19 | 85.58 | 615.17 | 417.21 | 210.19 |
| 630 | 7°52.5′ | 24°48.38′ | 313.04 | 22.58 | 618.29 | 89.71 | 624.77 | 424.20 | 213.82 |
| 640 | 8°00.0′ | 25°36.00′ | 317.88 | 23.66 | 627.34 | 93.97 | 634.34 | 431.22 | 217.47 |
| 650 | 8°07.5′ | 26°24.38′ | 322.71 | 24.78 | 636.33 | 98.35 | 643.88 | 438.25 | 221.15 |
| 660 | 8°15.0′ | 27°13.50′ | 327.53 | 25.92 | 645.25 | 102.86 | 653.40 | 445.32 | 224.84 |
| 670 | 8°22.5′ | 28°03.38′ | 332.34 | 27.11 | 654.11 | 107.50 | 662.89 | 452.41 | 228.56 |
| 680 | 8°30.0′ | 28°54.00′ | 337.14 | 28.32 | 662.90 | 112.27 | 672.34 | 459.53 | 232.31 |
| 690 | 8°37.5′ | 29°45.38′ | 341.92 | 29.58 | 671.62 | 117.17 | 681.76 | 466.67 | 236.08 |
| 700 | 8°45.0′ | 30°37.50′ | 346.69 | 30.86 | 680.26 | 122.20 | 691.15 | 473.85 | 239.87 |
| 710 | 8°52.5′ | 31°30.38′ | 351.45 | 32.19 | 688.83 | 127.36 | 700.50 | 481.05 | 243.70 |
| 720 | 9°00.0′ | 32°24.00′ | 356.20 | 33.54 | 697.31 | 132.65 | 709.82 | 488.29 | 247.56 |
| 730 | 9°07.5′ | 33°18.38′ | 360.93 | 34.94 | 705.72 | 138.07 | 719.10 | 495.57 | 251.45 |
| 740 | 9°15.0′ | 34°13.50′ | 365.64 | 36.37 | 714.03 | 143.63 | 728.33 | 502.88 | 255.37 |
| 750 | 9°22.5′ | 35°09.38′ | 370.34 | 37.84 | 722.25 | 149.32 | 737.53 | 510.23 | 259.33 |
| 760 | 9°30.0′ | 36°06.00′ | 375.03 | 39.34 | 730.38 | 155.15 | 746.68 | 517.62 | 263.32 |
| 770 | 9°37.5′ | 37°03.38′ | 379.69 | 40.89 | 738.41 | 161.11 | 755.78 | 525.05 | 267.35 |
| 780 | 9°45.0′ | 38°01.50′ | 384.34 | 42.47 | 746.34 | 167.20 | 764.84 | 532.53 | 271.42 |
| 790 | 9°52.5′ | 39°00.38′ | 388.98 | 44.08 | 754.16 | 173.43 | 773.85 | 540.05 | 275.54 |
| 800 | 10°00.0′ | 40°00.00′ | 393.59 | 45.74 | 761.88 | 179.79 | 782.80 | 547.62 | 279.70 |
| 810 | 10°07.5′ | 41°00.38′ | 398.18 | 47.44 | 769.48 | 186.28 | 791.71 | 555.24 | 283.90 |
| 820 | 10°15.0′ | 42°01.50′ | 402.76 | 49.17 | 776.97 | 192.91 | 800.56 | 562.91 | 288.16 |
| 830 | 10°22.5′ | 43°03.38′ | 407.31 | 50.94 | 784.34 | 199.67 | 809.35 | 570.64 | 292.46 |
| 840 | 10°30.0′ | 44°06.00′ | 411.84 | 52.75 | 791.58 | 206.56 | 818.09 | 578.43 | 296.82 |
| 850 | 10°37.5′ | 45°09.38′ | 416.35 | 54.60 | 798.70 | 213.59 | 826.77 | 586.27 | 301.24 |
| 860 | 10°45.0′ | 46°13.50′ | 420.84 | 56.49 | 805.68 | 220.74 | 835.38 | 594.18 | 305.71 |
| 870 | 10°52.5′ | 47°18.38′ | 425.30 | 58.42 | 812.53 | 228.03 | 843.93 | 602.16 | 310.25 |
| 880 | 11°00.0′ | 48°24.00′ | 429.74 | 60.39 | 819.25 | 235.44 | 852.41 | 610.21 | 314.85 |
| 890 | 11°07.5′ | 49°30.38′ | 434.15 | 62.40 | 825.81 | 242.98 | 860.82 | 618.33 | 319.52 |
| 900 | 11°15.0′ | 50°37.50′ | 438.54 | 64.45 | 832.23 | 250.65 | 869.16 | 626.53 | 324.25 |
| 910 | 11°22.5′ | 51°45.38′ | 442.90 | 66.54 | 838.50 | 258.44 | 877.42 | 634.80 | 329.07 |
| 920 | 11°30.0′ | 52°54.00′ | 447.23 | 68.67 | 844.61 | 266.36 | 885.61 | 643.16 | 333.96 |
| 930 | 11°37.5′ | 54°03.38′ | 451.54 | 70.84 | 850.56 | 274.40 | 893.73 | 651.61 | 338.93 |
| 940 | 11°45.0′ | 55°13.50′ | 455.82 | 73.05 | 856.35 | 282.55 | 901.76 | 660.15 | 343.99 |
| 950 | 11°52.5′ | 56°24.38′ | 460.06 | 75.29 | 861.97 | 290.82 | 909.71 | 668.79 | 349.13 |
| 960 | 12°00.0′ | 57°36.00′ | 464.28 | 77.58 | 867.41 | 299.21 | 917.57 | 677.53 | 354.38 |
| 970 | 12°07.5′ | 58°48.38′ | 468.46 | 79.91 | 872.68 | 307.71 | 925.34 | 686.37 | 359.72 |
| 980 | 12°15.0′ | 60°01.50′ | 472.61 | 82.28 | 877.77 | 316.32 | 933.03 | 695.33 | 365.16 |
| 990 | 12°22.5′ | 61°15.38′ | 476.73 | 84.69 | 882.67 | 325.03 | 940.62 | 704.40 | 370.71 |
| 1000 | 12°30.0′ | 62°30.00′ | 480.81 | 87.14 | 887.39 | 333.85 | 948.11 | 713.59 | 376.38 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

$a = 1\frac{1}{3}$

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°08.0′ | 0°00.40′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°16.0′ | 0°01.60′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°24.0′ | 0°03.60′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°32.0′ | 0°06.40′ | 20.00 | 0.01 | 40.00 | 0.02 | 40.00 | 26.67 | 13.33 |
| 50 | 0°40.0′ | 0°10.00′ | 25.00 | 0.01 | 50.00 | 0.05 | 50.00 | 33.33 | 16.67 |
| 60 | 0°48.0′ | 0°14.40′ | 30.00 | 0.02 | 60.00 | 0.08 | 60.00 | 40.00 | 20.00 |
| 70 | 0°56.0′ | 0°19.60′ | 35.00 | 0.03 | 70.00 | 0.13 | 70.00 | 46.67 | 23.33 |
| 80 | 1°04.0′ | 0°25.60′ | 40.00 | 0.05 | 80.00 | 0.20 | 80.00 | 53.33 | 26.67 |
| 90 | 1°12.0′ | 0°32.40′ | 45.00 | 0.07 | 90.00 | 0.28 | 90.00 | 60.00 | 30.00 |
| 100 | 1°20.0′ | 0°40.00′ | 50.00 | 0.10 | 100.00 | 0.39 | 100.00 | 66.67 | 33.33 |
| 110 | 1°28.0′ | 0°48.40′ | 55.00 | 0.13 | 110.00 | 0.52 | 110.00 | 73.33 | 36.67 |
| 120 | 1°36.0′ | 0°57.60′ | 60.00 | 0.17 | 120.00 | 0.67 | 120.00 | 80.00 | 40.00 |
| 130 | 1°44.0′ | 1°07.60′ | 65.00 | 0.21 | 129.99 | 0.85 | 130.00 | 86.67 | 43.33 |
| 140 | 1°52.0′ | 1°18.40′ | 70.00 | 0.27 | 139.99 | 1.06 | 140.00 | 93.34 | 46.67 |
| 150 | 2°00.0′ | 1°30.00′ | 75.00 | 0.33 | 149.99 | 1.31 | 150.00 | 100.00 | 50.00 |
| 160 | 2°08.0′ | 1°42.40′ | 80.00 | 0.40 | 159.99 | 1.59 | 159.99 | 106.67 | 53.34 |
| 170 | 2°16.0′ | 1°55.60′ | 85.00 | 0.48 | 169.98 | 1.91 | 169.99 | 113.34 | 56.67 |
| 180 | 2°24.0′ | 2°09.60′ | 90.00 | 0.57 | 179.97 | 2.26 | 179.99 | 120.01 | 60.01 |
| 190 | 2°32.0′ | 2°24.40′ | 94.99 | 0.67 | 189.97 | 2.66 | 189.99 | 126.68 | 63.34 |
| 200 | 2°40.0′ | 2°40.00′ | 99.99 | 0.78 | 199.96 | 3.10 | 199.98 | 133.35 | 66.68 |
| 210 | 2°48.0′ | 2°56.40′ | 104.99 | 0.90 | 209.94 | 3.59 | 209.98 | 140.02 | 70.02 |
| 220 | 2°56.0′ | 3°13.60′ | 109.99 | 1.03 | 219.93 | 4.13 | 219.97 | 146.69 | 73.36 |
| 230 | 3°04.0′ | 3°31.60′ | 114.99 | 1.18 | 229.91 | 4.72 | 229.96 | 153.36 | 76.69 |
| 240 | 3°12.0′ | 3°50.40′ | 119.98 | 1.34 | 239.89 | 5.36 | 239.95 | 160.04 | 80.03 |
| 250 | 3°20.0′ | 4°10.00′ | 124.98 | 1.51 | 249.87 | 6.06 | 249.94 | 166.71 | 83.38 |
| 260 | 3°28.0′ | 4°30.40′ | 129.97 | 1.70 | 259.84 | 6.81 | 259.93 | 173.39 | 86.72 |
| 270 | 3°36.0′ | 4°51.60′ | 134.97 | 1.91 | 269.81 | 7.63 | 269.91 | 180.07 | 90.06 |
| 280 | 3°44.0′ | 5°13.60′ | 139.96 | 2.13 | 279.77 | 8.51 | 279.90 | 186.75 | 93.41 |
| 290 | 3°52.0′ | 5°36.40′ | 144.95 | 2.36 | 289.72 | 9.45 | 289.88 | 193.43 | 96.75 |
| 300 | 4°00.0′ | 5°60.00′ | 149.95 | 2.62 | 299.67 | 10.46 | 299.85 | 200.12 | 100.10 |
| 310 | 4°08.0′ | 6°24.40′ | 154.94 | 2.89 | 309.61 | 11.54 | 309.83 | 206.80 | 103.46 |
| 320 | 4°16.0′ | 6°49.60′ | 159.92 | 3.18 | 319.55 | 12.70 | 319.80 | 213.49 | 106.81 |
| 330 | 4°24.0′ | 7°15.60′ | 164.91 | 3.48 | 329.47 | 13.92 | 329.76 | 220.19 | 110.17 |
| 340 | 4°32.0′ | 7°42.40′ | 169.90 | 3.81 | 339.39 | 15.22 | 339.73 | 226.88 | 113.53 |
| 350 | 4°40.0′ | 8°10.00′ | 174.88 | 4.15 | 349.29 | 16.60 | 349.68 | 233.58 | 116.89 |
| 360 | 4°48.0′ | 8°38.40′ | 179.86 | 4.52 | 359.18 | 18.07 | 359.64 | 240.29 | 120.26 |
| 370 | 4°56.0′ | 9°07.60′ | 184.84 | 4.91 | 369.06 | 19.61 | 369.58 | 247.00 | 123.63 |
| 380 | 5°04.0′ | 9°37.60′ | 189.82 | 5.32 | 378.93 | 21.24 | 379.52 | 253.71 | 127.01 |
| 390 | 5°12.0′ | 10°08.40′ | 194.80 | 5.75 | 388.78 | 22.96 | 389.46 | 260.43 | 130.39 |
| 400 | 5°20.0′ | 10°40.00′ | 199.77 | 6.20 | 398.62 | 24.76 | 399.38 | 267.15 | 133.78 |
| 410 | 5°28.0′ | 11°12.40′ | 204.74 | 6.67 | 408.43 | 26.66 | 409.30 | 273.88 | 137.17 |
| 420 | 5°36.0′ | 11°45.60′ | 209.71 | 7.17 | 418.23 | 28.65 | 419.21 | 280.62 | 140.56 |
| 430 | 5°44.0′ | 12°19.60′ | 214.67 | 7.70 | 428.01 | 30.73 | 429.12 | 287.36 | 143.97 |
| 440 | 5°52.0′ | 12°54.40′ | 219.63 | 8.24 | 437.77 | 32.92 | 439.01 | 294.12 | 147.38 |
| 450 | 6°00.0′ | 13°30.00′ | 224.58 | 8.82 | 447.51 | 35.20 | 448.89 | 300.88 | 150.80 |
| 460 | 6°08.0′ | 14°06.40′ | 229.54 | 9.42 | 457.22 | 37.59 | 458.76 | 307.65 | 154.22 |
| 470 | 6°16.0′ | 14°43.60′ | 234.48 | 10.04 | 466.90 | 40.08 | 468.62 | 314.42 | 157.66 |
| 480 | 6°24.0′ | 15°21.60′ | 239.43 | 10.70 | 476.56 | 42.67 | 478.47 | 321.21 | 161.10 |
| 490 | 6°32.0′ | 16°00.40′ | 244.36 | 11.38 | 486.19 | 45.38 | 488.30 | 328.01 | 164.56 |
| 500 | 6°40.0′ | 16°40.00′ | 249.30 | 12.08 | 495.79 | 48.19 | 498.12 | 334.82 | 168.02 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1⅓—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 6°48.0′ | 17°20.40′ | 254.22 | 12.82 | 505.35 | 51.11 | 507.93 | 341.65 | 171.50 |
| 520 | 6°56.0′ | 18°01.60′ | 259.14 | 13.59 | 514.88 | 54.15 | 517.72 | 348.48 | 174.98 |
| 530 | 7°04.0′ | 18°43.60′ | 264.06 | 14.38 | 524.37 | 57.30 | 527.49 | 355.33 | 178.48 |
| 540 | 7°12.0′ | 19°26.40′ | 268.97 | 15.21 | 533.82 | 60.57 | 537.24 | 362.20 | 182.00 |
| 550 | 7°20.0′ | 20°10.00′ | 273.87 | 16.06 | 543.23 | 63.96 | 546.98 | 369.07 | 185.52 |
| 560 | 7°28.0′ | 20°54.40′ | 278.76 | 16.95 | 552.59 | 67.47 | 556.69 | 375.97 | 189.07 |
| 570 | 7°36.0′ | 21°39.60′ | 283.65 | 17.87 | 561.91 | 71.10 | 566.39 | 382.88 | 192.62 |
| 580 | 7°44.0′ | 22°25.60′ | 288.53 | 18.82 | 571.18 | 74.85 | 576.06 | 389.82 | 196.20 |
| 590 | 7°52.0′ | 23°12.40′ | 293.39 | 19.80 | 580.39 | 78.73 | 585.71 | 396.77 | 199.79 |
| 600 | 8°00.0′ | 23°60.00′ | 298.25 | 20.81 | 589.56 | 82.73 | 595.33 | 403.74 | 203.40 |
| 610 | 8°08.0′ | 24°48.40′ | 303.10 | 21.86 | 598.66 | 86.86 | 604.93 | 410.73 | 207.03 |
| 620 | 8°16.0′ | 25°37.60′ | 307.94 | 22.94 | 607.71 | 91.12 | 614.51 | 417.75 | 210.69 |
| 630 | 8°24.0′ | 26°27.60′ | 312.77 | 24.06 | 616.70 | 95.51 | 624.05 | 424.79 | 214.36 |
| 640 | 8°32.0′ | 27°18.40′ | 317.59 | 25.21 | 625.62 | 100.03 | 633.56 | 431.86 | 218.06 |
| 650 | 8°40.0′ | 28°10.00′ | 322.40 | 26.40 | 634.47 | 104.69 | 643.05 | 438.95 | 221.78 |
| 660 | 8°48.0′ | 29°02.40′ | 327.19 | 27.62 | 643.25 | 109.48 | 652.50 | 446.07 | 225.53 |
| 670 | 8°56.0′ | 29°55.60′ | 331.98 | 28.88 | 651.95 | 114.40 | 661.91 | 453.22 | 229.30 |
| 630 | 9°04.0′ | 30°49.60′ | 336.75 | 30.17 | 660.58 | 119.45 | 671.29 | 460.40 | 233.11 |
| 690 | 9°12.0′ | 31°44.40′ | 341.50 | 31.51 | 669.12 | 124.65 | 680.63 | 467.62 | 236.94 |
| 700 | 9°20.0′ | 32°40.00′ | 346.24 | 32.87 | 677.59 | 129.98 | 689.94 | 474.87 | 240.81 |
| 710 | 9°28.0′ | 33°36.39′ | 350.97 | 34.28 | 685.96 | 135.44 | 699.20 | 482.15 | 244.71 |
| 720 | 9°36.0′ | 34°33.59′ | 355.68 | 35.72 | 694.24 | 141.05 | 708.42 | 489.48 | 248.64 |
| 730 | 9°44.0′ | 35°31.59′ | 360.37 | 37.21 | 702.43 | 146.79 | 717.60 | 496.84 | 252.61 |
| 740 | 9°52.0′ | 36°30.39′ | 365.05 | 38.73 | 710.52 | 152.67 | 726.73 | 504.25 | 256.62 |
| 750 | 10°00.0′ | 37°29.99′ | 369.71 | 40.29 | 718.50 | 158.69 | 735.82 | 511.70 | 260.67 |
| 760 | 10°08.0′ | 38°30.39′ | 374.35 | 41.88 | 726.38 | 164.84 | 744.85 | 519.20 | 264.76 |
| 770 | 10°16.0′ | 39°31.59′ | 378.97 | 43.52 | 734.15 | 171.14 | 753.84 | 526.74 | 268.90 |
| 780 | 10°24.0′ | 40°33.59′ | 383.58 | 45.20 | 741.81 | 177.57 | 762.77 | 534.34 | 273.08 |
| 790 | 10°32.0′ | 41°36.39′ | 388.16 | 46.92 | 749.35 | 184.14 | 771.64 | 541.99 | 277.32 |
| 800 | 10°40.0′ | 42°39.99′ | 392.72 | 48.67 | 756.76 | 190.85 | 780.46 | 549.70 | 281.60 |
| 810 | 10°48.0′ | 43°44.39′ | 397.26 | 50.47 | 764.05 | 197.70 | 789.21 | 557.46 | 285.94 |
| 820 | 10°56.0′ | 44°49.59′ | 401.78 | 52.31 | 771.21 | 204.68 | 797.91 | 565.29 | 290.34 |
| 830 | 11°04.0′ | 45°55.59′ | 406.27 | 54.19 | 778.23 | 211.80 | 806.54 | 573.18 | 294.80 |
| 840 | 11°12.0′ | 47°02.39′ | 410.74 | 56.11 | 785.12 | 219.05 | 815.10 | 581.14 | 299.31 |
| 850 | 11°20.0′ | 48°09.99′ | 415.18 | 58.07 | 791.86 | 226.43 | 823.60 | 589.17 | 303.90 |
| 860 | 11°28.0′ | 49°18.39′ | 419.60 | 60.07 | 798.46 | 233.95 | 832.03 | 597.28 | 308.55 |
| 870 | 11°36.0′ | 50°27.59′ | 423.99 | 62.11 | 804.90 | 241.60 | 840.38 | 605.46 | 313.28 |
| 880 | 11°44.0′ | 51°37.59′ | 428.36 | 64.19 | 811.19 | 249.37 | 848.65 | 613.73 | 318.08 |
| 890 | 11°52.0′ | 52°48.39′ | 432.69 | 66.32 | 817.32 | 257.27 | 856.85 | 622.08 | 322.97 |
| 900 | 12°00.0′ | 53°59.99′ | 437.00 | 68.48 | 823.28 | 265.30 | 864.97 | 630.52 | 327.93 |
| 910 | 12°08.0′ | 55°12.39′ | 441.28 | 70.69 | 829.07 | 273.45 | 873.00 | 639.06 | 332.99 |
| 920 | 12°16.0′ | 56°25.59′ | 445.52 | 72.94 | 834.69 | 281.73 | 880.95 | 647.70 | 338.13 |
| 930 | 12°24.0′ | 57°39.59′ | 449.74 | 75.23 | 840.13 | 290.12 | 888.81 | 656.44 | 343.38 |
| 940 | 12°32.0′ | 58°54.39′ | 453.92 | 77.56 | 845.39 | 298.62 | 896.58 | 665.29 | 348.73 |
| 950 | 12°40.0′ | 60°09.99′ | 458.07 | 79.93 | 850.46 | 307.24 | 904.25 | 674.26 | 354.18 |
| 960 | 12°48.0′ | 61°26.39′ | 462.18 | 82.35 | 855.33 | 315.97 | 911.83 | 683.35 | 359.75 |
| 970 | 12°56.0′ | 62°43.59′ | 466.26 | 84.80 | 860.02 | 324.81 | 919.31 | 692.56 | 365.43 |
| 980 | 13°04.0′ | 64°01.59′ | 470.30 | 87.30 | 864.50 | 333.75 | 926.68 | 701.91 | 371.24 |
| 990 | 13°12.0′ | 65°20.39′ | 474.30 | 89.83 | 868.77 | 342.79 | 933.95 | 711.40 | 377.19 |
| 1000 | 13°20.0′ | 66°39.99′ | 478.27 | 92.41 | 872.84 | 351.92 | 941.12 | 721.04 | 383.27 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°09.0′ | 0°00.45′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°18.0′ | 0°01.80′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°27.0′ | 0°04.05′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°36.0′ | 0°07.20′ | 20.00 | 0.01 | 40.00 | 0.03 | 40.00 | 26.67 | 13.33 |
| 50 | 0°45.0′ | 0°11.25′ | 25.00 | 0.01 | 50.00 | 0.05 | 50.00 | 33.33 | 16.67 |
| 60 | 0°54.0′ | 0°16.20′ | 30.00 | 0.02 | 60.00 | 0.09 | 60.00 | 40.00 | 20.00 |
| 70 | 1°03.0′ | 0°22.05′ | 35.00 | 0.04 | 70.00 | 0.15 | 70.00 | 46.67 | 23.33 |
| 80 | 1°12.0′ | 0°28.80′ | 40.00 | 0.06 | 80.00 | 0.22 | 80.00 | 53.33 | 26.67 |
| 90 | 1°21.0′ | 0°36.45′ | 45.00 | 0.08 | 90.00 | 0.32 | 90.00 | 60.00 | 30.00 |
| 100 | 1°30.0′ | 0°45.00′ | 50.00 | 0.11 | 100.00 | 0.44 | 100.00 | 66.67 | 33.33 |
| 110 | 1°39.0′ | 0°54.45′ | 55.00 | 0.15 | 110.00 | 0.58 | 110.00 | 73.33 | 36.67 |
| 120 | 1°48.0′ | 1°04.80′ | 60.00 | 0.19 | 120.00 | 0.75 | 120.00 | 80.00 | 40.00 |
| 130 | 1°57.0′ | 1°16.05′ | 65.00 | 0.24 | 129.99 | 0.96 | 130.00 | 86.67 | 43.34 |
| 140 | 2°06.0′ | 1°28.20′ | 70.00 | 0.30 | 139.99 | 1.20 | 140.00 | 93.34 | 46.67 |
| 150 | 2°15.0′ | 1°41.25′ | 75.00 | 0.37 | 149.99 | 1.47 | 149.99 | 100.00 | 50.00 |
| 160 | 2°24.0′ | 1°55.20′ | 80.00 | 0.45 | 159.98 | 1.79 | 159.99 | 106.67 | 43.34 |
| 170 | 2°33.0′ | 2°10.05′ | 85.00 | 0.54 | 169.98 | 2.14 | 169.99 | 113.34 | 56.67 |
| 180 | 2°42.0′ | 2°25.80′ | 89.99 | 0.64 | 179.97 | 2.54 | 179.99 | 120.01 | 60.01 |
| 190 | 2°51.0′ | 2°42.45′ | 94.99 | 0.75 | 189.96 | 2.99 | 189.98 | 126.68 | 63.35 |
| 200 | 3°00.0′ | 3°00.00′ | 99.99 | 0.87 | 199.95 | 3.49 | 199.98 | 133.35 | 66.68 |
| 210 | 3°09.0′ | 3°18.45′ | 104.99 | 1.01 | 209.93 | 4.04 | 209.97 | 140.02 | 70.02 |
| 220 | 3°18.0′ | 3°37.80′ | 109.99 | 1.16 | 219.91 | 4.64 | 219.96 | 146.70 | 73.36 |
| 230 | 3°27.0′ | 3°58.05′ | 114.98 | 1.33 | 229.89 | 5.31 | 229.95 | 153.37 | 76.70 |
| 240 | 3°36.0′ | 4°19.20′ | 119.98 | 1.51 | 239.86 | 6.03 | 239.94 | 160.05 | 80.04 |
| 250 | 3°45.0′ | 4°41.25′ | 124.97 | 1.70 | 249.83 | 6.81 | 249.93 | 166.73 | 83.39 |
| 260 | 3°54.0′ | 5°04.20′ | 129.97 | 1.92 | 259.80 | 7.66 | 259.91 | 173.40 | 86.73 |
| 270 | 4°03.0′ | 5°28.05′ | 134.96 | 2.15 | 269.75 | 8.58 | 269.89 | 180.09 | 90.08 |
| 280 | 4°12.0′ | 5°52.80′ | 139.95 | 2.39 | 279.71 | 9.57 | 279.87 | 186.77 | 93.43 |
| 290 | 4°21.0′ | 6°18.45′ | 144.94 | 2.66 | 289.65 | 10.63 | 289.84 | 193.46 | 96.78 |
| 300 | 4°30.0′ | 6°45.00′ | 149.93 | 2.94 | 299.58 | 11.77 | 299.81 | 200.15 | 100.13 |
| 310 | 4°39.0′ | 7°12.45′ | 154.92 | 3.25 | 309.51 | 12.98 | 309.78 | 206.84 | 103.49 |
| 320 | 4°48.0′ | 7°40.80′ | 159.90 | 3.57 | 319.43 | 14.28 | 319.74 | 213.53 | 106.85 |
| 330 | 4°57.0′ | 8°10.05′ | 164.89 | 3.92 | 329.33 | 15.66 | 329.70 | 220.23 | 110.21 |
| 340 | 5°06.0′ | 8°40.20′ | 169.87 | 4.28 | 339.22 | 17.12 | 339.65 | 226.94 | 113.58 |
| 350 | 5°15.0′ | 9°11.25′ | 174.85 | 4.67 | 349.10 | 18.67 | 349.60 | 233.65 | 116.95 |
| 360 | 5°24.0′ | 9°43.20′ | 179.83 | 5.08 | 358.97 | 20.32 | 359.54 | 240.36 | 120.33 |
| 370 | 5°33.0′ | 10°16.05′ | 184.80 | 5.52 | 368.81 | 22.05 | 369.47 | 247.08 | 123.71 |
| 380 | 5°42.0′ | 10°49.80′ | 189.77 | 5.98 | 378.64 | 23.88 | 379.40 | 253.81 | 127.10 |
| 390 | 5°51.0′ | 11°24.45′ | 194.74 | 6.46 | 388.46 | 25.81 | 389.31 | 260.54 | 130.49 |
| 400 | 6°00.0′ | 12°00.00′ | 199.71 | 6.97 | 398.25 | 27.84 | 399.22 | 267.28 | 133.89 |
| 410 | 6°09.0′ | 12°36.45′ | 204.67 | 7.51 | 408.02 | 29.97 | 409.12 | 274.03 | 137.30 |
| 420 | 6°18.0′ | 13°13.80′ | 209.63 | 8.07 | 417.77 | 32.20 | 419.01 | 280.79 | 140.71 |
| 430 | 6°27.0′ | 13°52.05′ | 214.58 | 8.65 | 427.49 | 34.55 | 428.88 | 287.55 | 144.14 |
| 440 | 6°36.0′ | 14°31.20′ | 219.53 | 9.27 | 437.18 | 37.00 | 438.75 | 294.33 | 147.57 |
| 450 | 6°45.0′ | 15°11.25′ | 224.47 | 9.92 | 446.85 | 39.56 | 448.60 | 301.11 | 151.01 |
| 460 | 6°54.0′ | 15°52.20′ | 229.41 | 10.59 | 456.48 | 42.24 | 458.43 | 307.91 | 154.46 |
| 470 | 7°03.0′ | 16°34.05′ | 234.35 | 11.29 | 466.09 | 45.03 | 468.26 | 314.72 | 157.93 |
| 480 | 7°12.0′ | 17°16.80′ | 239.27 | 12.02 | 475.65 | 47.94 | 478.06 | 321.54 | 161.40 |
| 490 | 7°21.0′ | 18°00.45′ | 244.20 | 12.79 | 485.18 | 50.97 | 487.85 | 328.37 | 164.89 |
| 500 | 7°30.0′ | 18°45.00′ | 249.11 | 13.58 | 494.67 | 54.13 | 497.62 | 335.22 | 168.39 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 7°39.0′ | 19°30.45′ | 254.02 | 14.41 | 504.12 | 57.40 | 507.38 | 342.09 | 171.90 |
| 520 | 7°48.0′ | 20°16.80′ | 258.92 | 15.27 | 513.52 | 60.80 | 517.11 | 348.97 | 175.43 |
| 530 | 7°57.0′ | 21°04.05′ | 263.81 | 16.16 | 522.88 | 64.34 | 526.82 | 355.87 | 178.97 |
| 540 | 8°06.0′ | 21°52.20′ | 268.69 | 17.09 | 532.19 | 67.99 | 536.51 | 362.79 | 182.54 |
| 550 | 8°15.0′ | 22°41.25′ | 273.57 | 18.05 | 541.44 | 71.79 | 546.18 | 369.72 | 186.12 |
| 560 | 8°24.0′ | 23°31.20′ | 278.43 | 19.04 | 550.64 | 75.71 | 555.82 | 376.68 | 189.72 |
| 570 | 8°33.0′ | 24°22.05′ | 283.29 | 20.07 | 559.78 | 79.77 | 565.43 | 383.66 | 193.34 |
| 580 | 8°42.0′ | 25°13.80′ | 288.14 | 21.14 | 568.85 | 83.96 | 575.02 | 390.67 | 196.98 |
| 590 | 8°51.0′ | 26°06.45′ | 292.97 | 22.24 | 577.87 | 88.29 | 584.57 | 397.70 | 200.64 |
| 600 | 9°00.0′ | 27°00.00′ | 297.79 | 23.38 | 586.81 | 92.76 | 594.10 | 404.75 | 204.33 |
| 610 | 9°09.0′ | 27°54.45′ | 302.60 | 24.55 | 595.69 | 97.37 | 603.59 | 411.84 | 208.04 |
| 620 | 9°18.0′ | 28°49.80′ | 307.40 | 25.76 | 604.49 | 102.12 | 613.05 | 418.95 | 211.78 |
| 630 | 9°27.0′ | 29°46.05′ | 312.19 | 27.01 | 613.21 | 107.02 | 622.47 | 426.10 | 215.55 |
| 640 | 9°36.0′ | 30°43.20′ | 316.96 | 28.30 | 621.84 | 112.05 | 631.86 | 433.27 | 219.35 |
| 650 | 9°45.0′ | 31°41.25′ | 321.71 | 29.63 | 630.40 | 117.24 | 641.21 | 440.49 | 223.18 |
| 660 | 9°54.0′ | 32°40.20′ | 326.46 | 31.00 | 638.86 | 122.56 | 650.51 | 447.73 | 227.05 |
| 670 | 10°03.0′ | 33°40.05′ | 331.18 | 32.41 | 647.23 | 128.03 | 659.77 | 455.02 | 230.95 |
| 680 | 10°12.0′ | 34°40.80′ | 335.89 | 33.85 | 655.51 | 133.65 | 668.99 | 462.35 | 234.89 |
| 690 | 10°21.0′ | 35°42.45′ | 340.58 | 35.34 | 663.68 | 139.41 | 678.16 | 469.72 | 238.86 |
| 700 | 10°30.0′ | 36°45.00′ | 345.25 | 36.87 | 671.74 | 145.32 | 687.28 | 477.14 | 242.88 |
| 710 | 10°39.0′ | 37°48.45′ | 349.91 | 38.44 | 679.70 | 151.38 | 696.35 | 484.60 | 246.94 |
| 720 | 10°48.0′ | 38°52.80′ | 354.54 | 40.05 | 687.55 | 157.58 | 705.37 | 492.11 | 251.05 |
| 730 | 10°57.0′ | 39°58.05′ | 359.16 | 41.71 | 695.27 | 163.93 | 714.33 | 499.68 | 255.20 |
| 740 | 11°06.0′ | 41°04.20′ | 363.76 | 43.40 | 702.87 | 170.43 | 723.24 | 507.30 | 259.41 |
| 750 | 11°15.0′ | 42°11.25′ | 368.32 | 45.14 | 710.35 | 177.07 | 732.08 | 514.98 | 263.67 |
| 760 | 11°24.0′ | 43°19.20′ | 372.87 | 46.92 | 717.69 | 183.86 | 740.87 | 522.72 | 267.99 |
| 770 | 11°33.0′ | 44°28.05′ | 377.40 | 48.74 | 724.90 | 190.79 | 749.58 | 530.52 | 272.36 |
| 780 | 11°42.0′ | 45°37.80′ | 381.90 | 50.61 | 731.96 | 197.87 | 758.23 | 538.40 | 276.80 |
| 790 | 11°51.0′ | 46°48.45′ | 386.37 | 52.52 | 738.88 | 205.09 | 766.81 | 546.34 | 281.31 |
| 800 | 12°00.0′ | 48°00.00′ | 390.82 | 54.47 | 745.65 | 212.45 | 775.32 | 554.36 | 285.88 |
| 810 | 12°09.0′ | 49°12.45′ | 395.24 | 56.47 | 752.26 | 219.95 | 783.76 | 562.45 | 290.53 |
| 820 | 12°18.0′ | 50°25.80′ | 399.64 | 58.51 | 758.71 | 227.59 | 792.11 | 570.63 | 295.25 |
| 830 | 12°27.0′ | 51°40.05′ | 404.00 | 60.59 | 765.00 | 235.37 | 800.39 | 578.90 | 300.05 |
| 840 | 12°36.0′ | 52°55.20′ | 408.34 | 62.72 | 771.12 | 243.28 | 808.58 | 587.26 | 304.94 |
| 850 | 12°45.0′ | 54°11.25′ | 412.64 | 64.89 | 777.06 | 251.32 | 816.69 | 595.71 | 309.92 |
| 860 | 12°54.0′ | 55°28.20′ | 416.91 | 67.11 | 782.82 | 259.50 | 824.71 | 604.27 | 314.99 |
| 870 | 13°03.0′ | 56°46.05′ | 421.15 | 69.36 | 788.39 | 267.80 | 832.63 | 612.93 | 320.16 |
| 880 | 13°12.0′ | 58°04.80′ | 425.35 | 71.67 | 793.78 | 276.22 | 840.46 | 621.71 | 325.43 |
| 890 | 13°21.0′ | 59°24.45′ | 429.52 | 74.01 | 798.96 | 284.77 | 848.20 | 630.60 | 330.82 |
| 900 | 13°30.0′ | 60°45.00′ | 433.65 | 76.40 | 803.95 | 293.44 | 855.83 | 639.62 | 336.32 |
| 910 | 13°39.0′ | 62°06.45′ | 437.75 | 78.84 | 808.74 | 302.22 | 863.36 | 648.77 | 341.95 |
| 920 | 13°48.0′ | 63°28.80′ | 441.81 | 81.31 | 813.31 | 311.11 | 870.78 | 658.06 | 347.70 |
| 930 | 13°57.0′ | 64°52.05′ | 445.83 | 83.83 | 817.66 | 320.12 | 878.09 | 667.49 | 353.59 |
| 940 | 14°06.0′ | 66°16.20′ | 449.80 | 86.39 | 821.80 | 329.22 | 885.29 | 677.08 | 359.63 |
| 950 | 14°15.0′ | 67°41.25′ | 453.74 | 89.00 | 825.71 | 338.42 | 892.37 | 686.83 | 365.81 |
| 960 | 14°24.0′ | 69°07.20′ | 457.63 | 91.65 | 829.39 | 347.72 | 899.33 | 696.75 | 372.16 |
| 970 | 14°33.0′ | 70°34.05′ | 461.48 | 94.33 | 832.84 | 357.11 | 906.17 | 706.85 | 378.68 |
| 980 | 14°42.0′ | 72°01.80′ | 465.29 | 97.06 | 836.04 | 366.58 | 912.88 | 717.15 | 385.38 |
| 990 | 14°51.0′ | 73°30.45′ | 469.05 | 99.83 | 839.01 | 376.13 | 919.46 | 727.64 | 392.27 |
| 1000 | 15°00.0′ | 75°00.00′ | 472.76 | 102.64 | 841.72 | 385.76 | 925.90 | 738.36 | 399.36 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 1.75

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°10.5′ | 0°00.53′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°21.0′ | 0°02.10′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°31.5′ | 0°04.73′ | 15.00 | 0.00 | 30.00 | 0.01 | 30.00 | 20.00 | 10.00 |
| 40 | 0°42.0′ | 0°08.40′ | 20.00 | 0.01 | 40.00 | 0.03 | 40.00 | 26.67 | 13.33 |
| 50 | 0°52.5′ | 0°13.13′ | 25.00 | 0.02 | 50.00 | 0.06 | 50.00 | 33.33 | 16.67 |
| 60 | 1°03.0′ | 0°18.90′ | 30.00 | 0.03 | 60.00 | 0.11 | 60.00 | 40.00 | 20.00 |
| 70 | 1°13.5′ | 0°25.73′ | 35.00 | 0.04 | 70.00 | 0.17 | 70.00 | 46.67 | 23.33 |
| 80 | 1°24.0′ | 0°33.60′ | 40.00 | 0.07 | 80.00 | 0.26 | 80.00 | 53.33 | 26.67 |
| 90 | 1°34.5′ | 0°42.53′ | 45.00 | 0.09 | 90.00 | 0.37 | 90.00 | 60.00 | 30.00 |
| 100 | 1°45.0′ | 0°52.50′ | 50.00 | 0.13 | 100.00 | 0.51 | 100.00 | 66.67 | 33.33 |
| 110 | 1°55.5′ | 1°03.53′ | 55.00 | 0.17 | 110.00 | 0.68 | 110.00 | 73.33 | 36.67 |
| 120 | 2°06.0′ | 1°15.60′ | 60.00 | 0.22 | 119.99 | 0.88 | 120.00 | 80.00 | 40.00 |
| 130 | 2°16.5′ | 1°28.73′ | 65.00 | 0.28 | 129.99 | 1.12 | 130.00 | 86.67 | 43.34 |
| 140 | 2°27.0′ | 1°42.90′ | 70.00 | 0.35 | 139.99 | 1.40 | 139.99 | 93.34 | 46.67 |
| 150 | 2°37.5′ | 1°58.13′ | 75.00 | 0.43 | 149.98 | 1.72 | 149.99 | 100.01 | 50.01 |
| 160 | 2°48.0′ | 2°14.40′ | 80.00 | 0.52 | 159.98 | 2.08 | 159.99 | 106.68 | 53.34 |
| 170 | 2°58.5′ | 2°31.73′ | 84.99 | 0.63 | 169.97 | 2.50 | 169.99 | 113.34 | 56.68 |
| 180 | 3°09.0′ | 2°50.10′ | 89.99 | 0.74 | 179.96 | 2.97 | 179.98 | 120.02 | 60.01 |
| 190 | 3°19.5′ | 3°09.53′ | 94.99 | 0.87 | 189.94 | 3.49 | 189.97 | 126.69 | 63.35 |
| 200 | 3°30.0′ | 3°30.00′ | 99.99 | 1.01 | 199.93 | 4.07 | 199.97 | 133.36 | 66.69 |
| 210 | 3°40.5′ | 3°51.53′ | 104.98 | 1.18 | 209.90 | 4.71 | 209.96 | 140.03 | 70.03 |
| 220 | 3°51.0′ | 4°14.10′ | 109.98 | 1.35 | 219.88 | 5.42 | 219.95 | 146.71 | 73.37 |
| 230 | 4°01.5′ | 4°37.73′ | 114.97 | 1.55 | 229.85 | 6.19 | 229.93 | 153.39 | 76.71 |
| 240 | 4°12.0′ | 5°02.40′ | 119.97 | 1.76 | 239.81 | 7.03 | 239.92 | 160.06 | 80.06 |
| 250 | 4°22.5′ | 5°28.13′ | 124.96 | 1.99 | 249.77 | 7.95 | 249.90 | 166.75 | 83.41 |
| 260 | 4°33.0′ | 5°54.90′ | 129.95 | 2.24 | 259.72 | 8.94 | 259.88 | 173.43 | 86.75 |
| 270 | 4°43.5′ | 6°22.73′ | 134.94 | 2.50 | 269.67 | 10.01 | 269.85 | 180.12 | 90.11 |
| 280 | 4°54.0′ | 6°51.60′ | 139.93 | 2.79 | 279.60 | 11.16 | 279.82 | 186.81 | 93.46 |
| 290 | 5°04.5′ | 7°21.53′ | 144.92 | 3.10 | 289.52 | 12.40 | 289.79 | 193.50 | 96.82 |
| 300 | 5°15.0′ | 7°52.50′ | 149.91 | 3.43 | 299.43 | 13.73 | 299.75 | 200.20 | 100.18 |
| 310 | 5°25.5′ | 8°24.53′ | 154.89 | 3.79 | 309.33 | 15.14 | 309.70 | 206.90 | 103.55 |
| 320 | 5°36.0′ | 8°57.60′ | 159.87 | 4.17 | 319.22 | 16.65 | 319.65 | 213.61 | 106.92 |
| 330 | 5°46.5′ | 9°31.73′ | 164.85 | 4.57 | 329.09 | 18.26 | 329.59 | 220.32 | 110.29 |
| 340 | 5°57.0′ | 10°06.90′ | 169.82 | 5.00 | 338.94 | 19.96 | 339.53 | 227.04 | 113.67 |
| 350 | 6°07.5′ | 10°43.13′ | 174.80 | 5.45 | 348.78 | 21.77 | 349.46 | 233.76 | 117.06 |
| 360 | 6°18.0′ | 11°20.40′ | 179.77 | 5.93 | 358.59 | 23.68 | 359.37 | 240.49 | 120.45 |
| 370 | 6°28.5′ | 11°58.73′ | 184.73 | 6.44 | 368.39 | 25.70 | 369.28 | 247.23 | 123.85 |
| 380 | 6°39.0′ | 12°38.10′ | 189.69 | 6.97 | 378.16 | 27.84 | 379.18 | 253.98 | 127.26 |
| 390 | 6°49.5′ | 13°18.53′ | 194.65 | 7.53 | 387.90 | 30.08 | 389.07 | 260.74 | 130.67 |
| 400 | 7°00.0′ | 14°00.00′ | 199.60 | 8.13 | 397.62 | 32.44 | 398.94 | 267.51 | 134.10 |
| 410 | 7°10.5′ | 14°42.53′ | 204.55 | 8.75 | 407.31 | 34.92 | 408.80 | 274.28 | 137.53 |
| 420 | 7°21.0′ | 15°26.10′ | 209.49 | 9.40 | 416.96 | 37.52 | 418.65 | 281.07 | 140.97 |
| 430 | 7°31.5′ | 16°10.73′ | 214.43 | 10.09 | 426.58 | 40.24 | 428.48 | 287.87 | 144.43 |
| 440 | 7°42.0′ | 16°56.40′ | 219.36 | 10.81 | 436.17 | 43.09 | 438.29 | 294.69 | 147.90 |
| 450 | 7°52.5′ | 17°43.13′ | 224.28 | 11.56 | 445.72 | 46.07 | 448.09 | 301.52 | 151.38 |
| 460 | 8°03.0′ | 18°30.90′ | 229.20 | 12.34 | 455.22 | 49.18 | 457.87 | 308.36 | 154.87 |
| 470 | 8°13.5′ | 19°19.73′ | 234.11 | 13.16 | 464.68 | 52.42 | 467.63 | 315.22 | 158.38 |
| 480 | 8°24.0′ | 20°09.60′ | 239.01 | 14.01 | 474.09 | 55.80 | 477.36 | 322.10 | 161.91 |
| 490 | 8°34.5′ | 21°00.53′ | 243.91 | 14.90 | 483.45 | 59.32 | 487.08 | 329.00 | 165.45 |
| 500 | 8°45.0′ | 21°52.50′ | 248.79 | 15.83 | 492.76 | 62.97 | 496.77 | 335.91 | 169.02 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 1.75—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 8°55.5′ | 22°45.53′ | 253.66 | 16.79 | 502.01 | 66.77 | 506.43 | 342.85 | 172.60 |
| 520 | 9°06.0′ | 23°39.60′ | 258.53 | 17.79 | 511.20 | 70.71 | 516.07 | 349.81 | 176.20 |
| 530 | 9°16.5′ | 24°34.73′ | 263.38 | 18.82 | 520.33 | 74.80 | 525.68 | 356.80 | 179.82 |
| 540 | 9°27.0′ | 25°30.90′ | 268.22 | 19.90 | 529.39 | 79.03 | 535.26 | 363.81 | 183.47 |
| 550 | 9°37.5′ | 26°28.13′ | 273.06 | 21.01 | 538.38 | 83.41 | 544.80 | 370.85 | 187.14 |
| 560 | 9°48.0′ | 27°26.40′ | 277.87 | 22.17 | 547.29 | 87.94 | 554.31 | 377.92 | 190.84 |
| 570 | 9°58.5′ | 28°25.73′ | 282.68 | 23.36 | 556.13 | 92.63 | 563.79 | 385.02 | 194.57 |
| 580 | 10°09.0′ | 29°26.10′ | 287.47 | 24.60 | 564.88 | 97.47 | 573.23 | 392.15 | 198.33 |
| 590 | 10°19.5′ | 30°27.53′ | 292.24 | 25.88 | 573.54 | 102.46 | 582.62 | 399.32 | 202.12 |
| 600 | 10°30.0′ | 31°30.00′ | 297.00 | 27.19 | 582.12 | 107.60 | 591.98 | 406.52 | 205.94 |
| 610 | 10°40.5′ | 32°33.53′ | 301.75 | 28.56 | 590.59 | 112.91 | 601.29 | 413.77 | 209.80 |
| 620 | 10°51.0′ | 33°38.10′ | 306.47 | 29.96 | 598.97 | 118.37 | 610.56 | 421.05 | 213.70 |
| 630 | 11°01.5′ | 34°43.73′ | 311.18 | 31.41 | 607.24 | 123.99 | 619.77 | 428.38 | 217.64 |
| 640 | 11°12.0′ | 35°50.40′ | 315.87 | 32.90 | 615.41 | 129.76 | 628.94 | 435.75 | 221.62 |
| 650 | 11°22.5′ | 36°58.13′ | 320.54 | 34.43 | 623.46 | 135.70 | 638.05 | 443.18 | 225.64 |
| 660 | 11°33.0′ | 38°06.90′ | 325.19 | 36.01 | 631.39 | 141.79 | 647.11 | 450.65 | 229.71 |
| 670 | 11°43.5′ | 39°16.73′ | 329.82 | 37.64 | 639.19 | 148.04 | 566.11 | 458.18 | 233.84 |
| 680 | 11°54.0′ | 40°27.60′ | 334.43 | 39.31 | 646.86 | 154.45 | 665.05 | 465.77 | 238.01 |
| 690 | 12°04.5′ | 41°39.53′ | 339.01 | 41.03 | 654.41 | 161.02 | 673.92 | 473.42 | 242.25 |
| 700 | 12°15.0′ | 42°52.50′ | 343.57 | 42.79 | 661.81 | 167.75 | 682.73 | 481.13 | 246.54 |
| 710 | 12°25.5′ | 44°06.53′ | 348.10 | 44.60 | 669.06 | 174.63 | 691.47 | 488.91 | 250.89 |
| 720 | 12°36.0′ | 45°21.60′ | 352.61 | 46.45 | 676.16 | 181.67 | 700.14 | 496.77 | 255.31 |
| 730 | 12°46.5′ | 46°37.73′ | 357.09 | 48.35 | 683.11 | 188.86 | 708.74 | 504.70 | 259.81 |
| 740 | 12°57.0′ | 47°54.90′ | 361.54 | 50.30 | 689.90 | 196.20 | 717.25 | 512.71 | 264.37 |
| 750 | 13°07.5′ | 49°13.13′ | 365.96 | 52.30 | 696.51 | 203.70 | 725.69 | 520.80 | 269.01 |
| 760 | 13°18.0′ | 50°32.40′ | 370.35 | 54.34 | 702.96 | 211.35 | 734.04 | 528.99 | 273.74 |
| 770 | 13°28.5′ | 51°52.73′ | 374.71 | 56.43 | 709.22 | 219.14 | 742.31 | 537.26 | 278.55 |
| 780 | 13°39.0′ | 53°14.10′ | 379.04 | 58.56 | 715.30 | 227.08 | 750.48 | 545.64 | 283.46 |
| 790 | 13°49.5′ | 54°36.53′ | 383.34 | 60.75 | 721.19 | 235.16 | 758.56 | 554.13 | 288.47 |
| 800 | 14°00.0′ | 56°00.00′ | 387.60 | 62.98 | 726.88 | 243.38 | 766.55 | 562.72 | 293.57 |
| 810 | 14°10.5′ | 57°24.53′ | 391.82 | 65.26 | 732.37 | 251.74 | 774.43 | 571.43 | 298.79 |
| 820 | 14°21.0′ | 58°50.10′ | 396.00 | 67.58 | 737.65 | 260.23 | 782.21 | 580.27 | 304.12 |
| 830 | 14°31.5′ | 60°16.73′ | 400.15 | 69.96 | 742.72 | 268.85 | 789.88 | 589.24 | 309.58 |
| 840 | 14°42.0′ | 61°44.40′ | 404.26 | 72.38 | 747.57 | 277.60 | 797.45 | 598.35 | 315.17 |
| 850 | 14°52.5′ | 63°13.13′ | 408.32 | 74.84 | 752.19 | 286.47 | 804.89 | 607.60 | 320.89 |
| 860 | 15°03.0′ | 64°42.90′ | 412.35 | 77.36 | 756.58 | 295.45 | 812.22 | 617.01 | 326.76 |
| 870 | 15°13.5′ | 66°13.73′ | 416.33 | 79.92 | 760.73 | 304.55 | 819.43 | 626.59 | 332.78 |
| 880 | 15°24.0′ | 67°45.60′ | 420.27 | 82.52 | 764.64 | 313.75 | 826.51 | 636.34 | 338.97 |
| 890 | 15°34.5′ | 69°18.53′ | 424.16 | 85.17 | 768.30 | 323.06 | 833.46 | 646.28 | 345.34 |
| 900 | 15°45.0′ | 70°52.50′ | 428.00 | 87.87 | 771.70 | 332.46 | 840.27 | 656.41 | 351.88 |
| 910 | 15°55.5′ | 72°27.53′ | 431.79 | 90.61 | 774.85 | 341.95 | 846.95 | 666.76 | 358.63 |
| 920 | 16°06.0′ | 74°03.60′ | 435.54 | 93.39 | 777.73 | 351.53 | 853.48 | 677.33 | 365.59 |
| 930 | 16°16.5′ | 75°40.73′ | 439.23 | 96.22 | 780.34 | 361.18 | 859.87 | 688.13 | 372.77 |
| 940 | 16°27.0′ | 77°18.90′ | 442.87 | 99.09 | 782.67 | 370.91 | 866.11 | 699.19 | 380.19 |
| 950 | 16°37.5′ | 78°58.13′ | 446.46 | 102.00 | 784.73 | 380.69 | 872.20 | 710.51 | 387.86 |
| 960 | 16°48.0′ | 80°38.40′ | 449.99 | 104.96 | 786.50 | 390.53 | 878.12 | 722.13 | 395.80 |
| 970 | 16°58.5′ | 82°19.73′ | 453.47 | 107.95 | 787.98 | 400.42 | 883.89 | 734.05 | 404.04 |
| 980 | 17°09.0′ | 84°02.10′ | 456.89 | 110.99 | 789.17 | 410.35 | 889.48 | 746.29 | 412.59 |
| 990 | 17°19.5′ | 85°45.53′ | 460.25 | 114.06 | 790.06 | 420.31 | 894.90 | 758.89 | 421.47 |
| 1000 | 17°30.0′ | 87°30.00′ | 463.55 | 117.17 | 790.65 | 430.30 | 900.15 | 771.86 | 430.71 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 2.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°12′ | 0°00.60′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°24′ | 0°02.40′ | 10.00 | 0.00 | 20.00 | 0.00 | 20.00 | 13.33 | 6.67 |
| 30 | 0°36′ | 0°05.40′ | 15.00 | 0.00 | 30.00 | 0.02 | 30.00 | 20.00 | 10.00 |
| 40 | 0°48′ | 0°09.60′ | 20.00 | 0.01 | 40.00 | 0.04 | 40.00 | 26.67 | 13.33 |
| 50 | 1°00′ | 0°15.00′ | 25.00 | 0.02 | 50.00 | 0.07 | 50.00 | 33.33 | 16.67 |
| 60 | 1°12′ | 0°21.60′ | 30.00 | 0.03 | 60.00 | 0.13 | 60.00 | 40.00 | 20.00 |
| 70 | 1°24′ | 0°29.40′ | 35.00 | 0.05 | 70.00 | 0.20 | 70.00 | 46.67 | 23.33 |
| 80 | 1°36′ | 0°38.40′ | 40.00 | 0.07 | 80.00 | 0.30 | 80.00 | 53.33 | 26.67 |
| 90 | 1°48′ | 0°48.60′ | 45.00 | 0.11 | 90.00 | 0.42 | 90.00 | 60.00 | 30.00 |
| 100 | 2°00′ | 1°00.00′ | 50.00 | 0.15 | 100.00 | 0.58 | 100.00 | 66.67 | 33.33 |
| 110 | 2°12′ | 1°12.60′ | 55.00 | 0.19 | 110.00 | 0.77 | 110.00 | 73.34 | 36.67 |
| 120 | 2°24′ | 1°26.40′ | 60.00 | 0.25 | 119.99 | 1.01 | 120.00 | 80.00 | 40.00 |
| 130 | 2°36′ | 1°41.40′ | 65.00 | 0.32 | 129.99 | 1.28 | 129.99 | 86.67 | 43.34 |
| 140 | 2°48′ | 1°57.60′ | 70.00 | 0.40 | 139.98 | 1.60 | 139.99 | 93.34 | 46.67 |
| 150 | 3°00′ | 2°15.00′ | 75.00 | 0.49 | 149.98 | 1.96 | 149.99 | 100.01 | 50.01 |
| 160 | 3°12′ | 2°33.60′ | 79.99 | 0.60 | 159.97 | 2.38 | 159.99 | 106.68 | 53.34 |
| 170 | 3°24′ | 2°53.40′ | 84.99 | 0.71 | 169.96 | 2.86 | 169.98 | 113.35 | 56.68 |
| 180 | 3°36′ | 3°14.40′ | 89.99 | 0.85 | 179.94 | 3.39 | 179.97 | 120.02 | 60.02 |
| 190 | 3°48′ | 3°36.60′ | 94.99 | 1.00 | 189.92 | 3.99 | 189.97 | 126.69 | 63.36 |
| 200 | 4°00′ | 4°00.00′ | 99.98 | 1.16 | 199.90 | 4.65 | 199.96 | 133.37 | 66.70 |
| 210 | 4°12′ | 4°24.60′ | 104.98 | 1.35 | 209.88 | 5.39 | 209.94 | 140.04 | 70.04 |
| 220 | 4°24′ | 4°50.40′ | 109.97 | 1.55 | 219.84 | 6.19 | 219.93 | 146.72 | 73.38 |
| 230 | 4°36′ | 5°17.40′ | 114.97 | 1.77 | 229.80 | 7.07 | 229.91 | 153.40 | 76.73 |
| 240 | 4°48′ | 5°45.60′ | 119.96 | 2.01 | 239.76 | 8.04 | 239.89 | 160.08 | 80.08 |
| 250 | 5°00′ | 6°15.00′ | 124.95 | 2.27 | 249.70 | 9.08 | 249.87 | 166.77 | 83.43 |
| 260 | 5°12′ | 6°45.60′ | 129.94 | 2.56 | 259.64 | 10.22 | 259.84 | 173.46 | 86.78 |
| 270 | 5°24′ | 7°17.40′ | 134.93 | 2.86 | 269.56 | 11.44 | 269.81 | 180.15 | 90.14 |
| 280 | 5°36′ | 7°50.40′ | 139.91 | 3.19 | 279.48 | 12.75 | 279.77 | 186.85 | 93.50 |
| 290 | 5°48′ | 8°24.60′ | 144.90 | 3.54 | 289.38 | 14.17 | 289.72 | 193.55 | 96.87 |
| 300 | 6°00′ | 9°00.00′ | 149.88 | 3.92 | 299.26 | 15.68 | 299.67 | 200.26 | 100.24 |
| 310 | 6°12′ | 9°36.60′ | 154.85 | 4.33 | 309.13 | 17.30 | 309.61 | 206.97 | 103.61 |
| 320 | 6°24′ | 10°14.40′ | 159.83 | 4.76 | 318.98 | 19.02 | 319.55 | 213.69 | 106.99 |
| 330 | 6°36′ | 10°53.40′ | 164.80 | 5.22 | 328.81 | 20.85 | 329.47 | 220.42 | 110.38 |
| 340 | 6°48′ | 11°33.60′ | 169.77 | 5.71 | 338.62 | 22.80 | 339.39 | 227.15 | 113.77 |
| 350 | 7°00′ | 12°15.00′ | 174.73 | 6.23 | 348.40 | 24.86 | 349.29 | 233.89 | 117.18 |
| 360 | 7°12′ | 12°57.60′ | 179.69 | 6.77 | 358.16 | 27.04 | 359.18 | 240.65 | 120.59 |
| 370 | 7°24′ | 13°41.40′ | 184.65 | 7.35 | 367.89 | 29.35 | 369.06 | 247.41 | 124.01 |
| 380 | 7°36′ | 14°26.40′ | 189.60 | 7.96 | 377.59 | 31.78 | 378.93 | 254.18 | 127.44 |
| 390 | 7°48′ | 15°12.60′ | 194.54 | 8.61 | 387.26 | 34.34 | 388.78 | 260.97 | 130.88 |
| 400 | 8°00′ | 16°00.00′ | 199.48 | 9.28 | 396.89 | 37.03 | 398.62 | 267.76 | 134.33 |
| 410 | 8°12′ | 16°48.60′ | 204.41 | 9.99 | 406.48 | 39.85 | 408.43 | 274.58 | 137.80 |
| 420 | 8°24′ | 17°38.40′ | 209.34 | 10.74 | 416.04 | 42.81 | 418.23 | 281.40 | 141.28 |
| 430 | 8°36′ | 18°29.40′ | 214.26 | 11.52 | 425.54 | 45.91 | 428.01 | 288.25 | 144.77 |
| 440 | 8°48′ | 19°21.60′ | 219.1[illegible] | 12.34 | 435.00 | 49.16 | 437.77 | 295.11 | 148.28 |
| 450 | 9°00′ | 20°15.00′ | 224.07 | 13.19 | 444.41 | 52.54 | 447.51 | 301.99 | 151.81 |
| 460 | 9°12′ | 21°09.60′ | 228.96 | 14.09 | 453.77 | 56.08 | 457.22 | 308.89 | 155.35 |
| 470 | 9°24′ | 22°05.40′ | 233.84 | 15.02 | 463.06 | 59.76 | 466.90 | 315.81 | 158.92 |
| 480 | 9°36′ | 23°02.40′ | 238.71 | 15.99 | 472.30 | 63.60 | 476.56 | 322.75 | 162.51 |
| 490 | 9°48′ | 24°00.60′ | 243.57 | 17.00 | 481.46 | 67.59 | 486.19 | 329.72 | 166.12 |
| 500 | 10°00′ | 25°00.00′ | 248.42 | 18.06 | 490.56 | 71.74 | 495.78 | 336.72 | 169.75 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 2.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 10°12′ | 26°00.60′ | 253.26 | 19.15 | 499.59 | 76.04 | 505.34 | 343.74 | 173.41 |
| 520 | 10°24′ | 27°02.40′ | 258.08 | 20.29 | 508.54 | 80.51 | 514.87 | 350.80 | 177.10 |
| 530 | 10°36′ | 28°05.40′ | 262.89 | 21.47 | 517.40 | 85.14 | 524.36 | 357.89 | 180.81 |
| 540 | 10°48′ | 29°09.60′ | 267.69 | 22.69 | 526.18 | 89.93 | 533.81 | 365.01 | 184.56 |
| 550 | 11°00′ | 30°15.00′ | 272.46 | 23.96 | 534.87 | 94.88 | 543.22 | 372.17 | 188.34 |
| 560 | 11°12′ | 31°21.60′ | 277.23 | 25.27 | 543.45 | 100.00 | 552.58 | 379.36 | 192.16 |
| 570 | 11°24′ | 32°29.40′ | 281.97 | 26.63 | 551.94 | 105.29 | 561.90 | 386.60 | 196.02 |
| 580 | 11°36′ | 33°38.40′ | 286.70 | 28.03 | 560.32 | 110.75 | 571.16 | 393.89 | 199.91 |
| 590 | 11°48′ | 34°48.60′ | 291.41 | 29.48 | 568.59 | 116.37 | 580.38 | 401.22 | 203.85 |
| 600 | 12°00′ | 36°00.00′ | 296.10 | 30.98 | 576.74 | 122.16 | 589.54 | 408.60 | 207.84 |
| 610 | 12°12′ | 37°12.60′ | 300.76 | 32.52 | 584.77 | 128.13 | 598.64 | 416.03 | 211.87 |
| 620 | 12°24′ | 38°26.40′ | 305.41 | 34.11 | 592.67 | 134.26 | 607.69 | 423.52 | 215.96 |
| 630 | 12°36′ | 39°41.40′ | 310.03 | 35.75 | 600.43 | 140.56 | 616.67 | 431.07 | 220.10 |
| 640 | 12°48′ | 40°57.60′ | 314.63 | 37.44 | 608.06 | 147.03 | 625.58 | 438.68 | 224.29 |
| 650 | 13°00′ | 42°15.00′ | 319.20 | 39.18 | 615.53 | 153.67 | 634.43 | 446.36 | 228.55 |
| 660 | 13°12′ | 43°33.60′ | 323.74 | 40.96 | 622.86 | 160.48 | 643.20 | 454.10 | 232.88 |
| 670 | 13°24′ | 44°53.40′ | 328.26 | 42.80 | 630.03 | 167.45 | 651.90 | 461.93 | 237.27 |
| 680 | 13°36′ | 46°14.40′ | 332.75 | 44.68 | 637.03 | 174.59 | 660.52 | 469.83 | 241.74 |
| 690 | 13°48′ | 47°36.60′ | 337.21 | 46.62 | 643.86 | 181.90 | 669.06 | 477.82 | 246.28 |
| 700 | 14°00′ | 49°00.00′ | 341.64 | 48.60 | 650.51 | 189.36 | 677.51 | 485.90 | 250.91 |
| 710 | 14°12′ | 50°24.60′ | 346.03 | 50.64 | 656.97 | 196.99 | 685.87 | 494.07 | 255.62 |
| 720 | 14°24′ | 51°50.40′ | 350.40 | 52.73 | 663.25 | 204.78 | 694.14 | 502.34 | 260.43 |
| 730 | 14°36′ | 53°17.40′ | 354.72 | 54.86 | 669.33 | 212.72 | 702.32 | 510.72 | 265.34 |
| 740 | 14°48′ | 54°45.60′ | 359.02 | 57.05 | 675.20 | 220.81 | 710.39 | 519.21 | 270.35 |
| 750 | 15°00′ | 56°15.00′ | 363.27 | 59.29 | 680.87 | 229.05 | 718.36 | 527.82 | 275.48 |
| 760 | 15°12′ | 57°45.60′ | 367.48 | 61.58 | 686.31 | 237.44 | 726.22 | 536.56 | 280.72 |
| 770 | 15°24′ | 59°17.40′ | 371.66 | 63.92 | 691.53 | 245.96 | 733.97 | 545.43 | 286.08 |
| 780 | 15°36′ | 60°50.40′ | 375.79 | 66.31 | 696.52 | 254.63 | 741.61 | 554.45 | 291.58 |
| 790 | 15°48′ | 62°24.60′ | 379.88 | 68.75 | 701.28 | 263.43 | 749.12 | 563.62 | 297.23 |
| 800 | 16°00′ | 64°00.00′ | 383.93 | 71.24 | 705.79 | 272.35 | 756.51 | 572.95 | 303.02 |
| 810 | 16°12′ | 65°36.60′ | 387.93 | 73.77 | 710.04 | 281.40 | 763.77 | 582.45 | 308.98 |
| 820 | 16°24′ | 67°14.40′ | 391.88 | 76.36 | 714.04 | 290.57 | 770.90 | 592.14 | 315.10 |
| 830 | 16°36′ | 68°53.40′ | 395.79 | 79.00 | 717.78 | 299.84 | 777.89 | 602.02 | 321.41 |
| 840 | 16°48′ | 70°33.60′ | 399.64 | 81.68 | 721.24 | 309.22 | 784.74 | 612.11 | 327.92 |
| 950 | 17°00′ | 72°15.00′ | 403.44 | 84.42 | 724.43 | 318.70 | 791.44 | 622.42 | 334.63 |
| 860 | 17°12′ | 73°57.60′ | 407.19 | 87.20 | 727.34 | 328.27 | 797.99 | 632.96 | 341.57 |
| 870 | 17°24′ | 75°41.40′ | 410.89 | 90.02 | 729.96 | 337.92 | 804.38 | 643.76 | 348.74 |
| 880 | 17°36′ | 77°26.40′ | 414.53 | 92.89 | 732.28 | 347.64 | 810.61 | 654.83 | 356.17 |
| 890 | 17°48′ | 79°12.60′ | 418.11 | 95.81 | 734.30 | 357.44 | 816.68 | 666.18 | 363.87 |
| 900 | 18°00′ | 81°00.00′ | 421.63 | 98.77 | 736.02 | 367.29 | 822.58 | 677.85 | 371.87 |
| 910 | 18°12′ | 82°48.60′ | 425.09 | 101.78 | 737.43 | 377.19 | 828.30 | 689.85 | 380.18 |
| 920 | 18°24′ | 84°38.40′ | 428.50 | 104.83 | 738.52 | 387.13 | 833.84 | 702.20 | 388.83 |
| 930 | 18°36′ | 86°29.40′ | 431.83 | 107.91 | 739.30 | 397.10 | 839.19 | 714.94 | 397.84 |
| 940 | 18°48′ | 88°21.60′ | 435.11 | 111.04 | 739.75 | 407.09 | 844.36 | 728.09 | 407.25 |
| 950 | 19°00′ | 90°15.00′ | 438.32 | 114.21 | 739.87 | 417.09 | 849.33 | 741.69 | 417.09 |
| 960 | 19°12′ | 92°09.60′ | 441.46 | 117.42 | 739.66 | 427.08 | 854.10 | 755.77 | 427.39 |
| 970 | 19°24′ | 94°05.40′ | 444.53 | 120.66 | 739.11 | 437.07 | 858.67 | 770.37 | 438.18 |
| 980 | 19°36′ | 96°02.40′ | 447.53 | 123.94 | 738.23 | 447.03 | 863.03 | 785.53 | 449.52 |
| 990 | 19°48′ | 98°00.60′ | 450.46 | 127.26 | 737.01 | 456.95 | 867.17 | 801.31 | 461.45 |
| 1000 | 20°00′ | 100°00.00′ | 453.32 | 130.60 | 735.44 | 466.83 | 871.10 | 817.76 | 474.03 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 2.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°15′ | 0°00.75′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°30′ | 0°03.00′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 0°45′ | 0°06.75′ | 15.00 | 0.00 | 30.00 | 0.02 | 30.00 | 20.00 | 10.00 |
| 40 | 1°00′ | 0°12.00′ | 20.00 | 0.01 | 40.00 | 0.05 | 40.00 | 26.67 | 13.33 |
| 50 | 1°15′ | 0°18.75′ | 25.00 | 0.02 | 50.00 | 0.09 | 50.00 | 33.33 | 16.67 |
| 60 | 1°30′ | 0°27.00′ | 30.00 | 0.04 | 60.00 | 0.16 | 60.00 | 40.00 | 20.00 |
| 70 | 1°45′ | 0°36.75′ | 35.00 | 0.06 | 70.00 | 0.25 | 70.00 | 46.67 | 23.33 |
| 80 | 2°00′ | 0°48.00′ | 40.00 | 0.09 | 80.00 | 0.37 | 80.00 | 53.33 | 26.67 |
| 90 | 2°15′ | 1°00.75′ | 45.00 | 0.13 | 90.00 | 0.53 | 90.00 | 60.00 | 30.00 |
| 100 | 2°30′ | 1°15.00′ | 50.00 | 0.18 | 100.00 | 0.73 | 100.00 | 66.67 | 33.33 |
| 110 | 2°45′ | 1°30.75′ | 55.00 | 0.24 | 109.99 | 0.97 | 110.00 | 73.34 | 36.67 |
| 120 | 3°00′ | 1°48.00′ | 60.00 | 0.31 | 119.99 | 1.26 | 119.99 | 80.00 | 40.00 |
| 130 | 3°15′ | 2°06.75′ | 65.00 | 0.40 | 129.98 | 1.60 | 129.99 | 86.67 | 43.34 |
| 140 | 3°30′ | 2°27.00′ | 70.00 | 0.50 | 139.97 | 2.00 | 139.99 | 93.34 | 46.67 |
| 150 | 3°45′ | 2°48.75′ | 74.99 | 0.61 | 149.96 | 2.45 | 149.98 | 100.01 | 50.01 |
| 160 | 4°00′ | 3°12.00′ | 79.99 | 0.74 | 159.95 | 2.98 | 159.98 | 106.68 | 53.35 |
| 170 | 4°15′ | 3°36.75′ | 84.99 | 0.89 | 169.93 | 3.57 | 169.97 | 113.36 | 56.69 |
| 180 | 4°30′ | 4°03.00′ | 89.99 | 1.06 | 179.91 | 4.24 | 179.96 | 120.03 | 60.03 |
| 190 | 4°45′ | 4°30.75′ | 94.98 | 1.25 | 189.88 | 4.99 | 189.95 | 126.71 | 63.37 |
| 200 | 5°00′ | 5°00.00′ | 99.97 | 1.45 | 199.85 | 5.81 | 199.93 | 133.39 | 66.72 |
| 210 | 5°15′ | 5°30.75′ | 104.97 | 1.68 | 209.81 | 6.73 | 209.91 | 140.07 | 70.06 |
| 220 | 5°30′ | 6°03.00′ | 109.96 | 1.94 | 219.75 | 7.74 | 219.89 | 146.75 | 73.41 |
| 230 | 5°45′ | 6°36.75′ | 114.95 | 2.21 | 229.69 | 8.84 | 229.86 | 153.44 | 76.76 |
| 240 | 6°00′ | 7°12.00′ | 119.94 | 2.51 | 239.62 | 10.04 | 239.83 | 160.13 | 80.12 |
| 250 | 6°15′ | 7°48.75′ | 124.92 | 2.84 | 249.54 | 11.35 | 249.79 | 166.83 | 83.48 |
| 260 | 6°30′ | 8°27.00′ | 129.91 | 3.19 | 259.44 | 12.76 | 259.75 | 173.53 | 86.85 |
| 270 | 6°45′ | 9°06.75′ | 134.89 | 3.58 | 269.32 | 14.29 | 269.70 | 180.24 | 90.22 |
| 280 | 7°00′ | 9°48.00′ | 139.86 | 3.99 | 279.18 | 15.93 | 279.64 | 186.95 | 93.59 |
| 290 | 7°15′ | 10°30.75′ | 144.84 | 4.43 | 289.03 | 17.69 | 289.57 | 193.68 | 96.98 |
| 300 | 7°30′ | 11°15.00′ | 149.81 | 4.90 | 298.85 | 19.58 | 299.49 | 200.41 | 100.37 |
| 310 | 7°45′ | 12°00.75′ | 154.77 | 5.41 | 308.64 | 21.60 | 309.39 | 207.14 | 103.77 |
| 320 | 8°00′ | 12°48.00′ | 159.73 | 5.95 | 318.41 | 23.74 | 319.29 | 213.89 | 107.18 |
| 330 | 8°15′ | 13°36.75′ | 164.69 | 6.52 | 328.14 | 26.03 | 329.17 | 220.65 | 110.59 |
| 340 | 8°30′ | 14°27.00′ | 169.64 | 7.13 | 337.84 | 28.45 | 339.04 | 227.43 | 114.02 |
| 350 | 8°45′ | 15°18.75′ | 174.58 | 7.78 | 347.51 | 31.02 | 348.89 | 234.21 | 117.47 |
| 360 | 9°00′ | 16°12.00′ | 179.52 | 8.46 | 357.13 | 33.74 | 358.72 | 241.01 | 120.92 |
| 370 | 9°15′ | 17°06.75′ | 184.45 | 9.18 | 366.71 | 36.60 | 368.54 | 247.83 | 124.39 |
| 380 | 9°30′ | 18°03.00′ | 189.37 | 9.94 | 376.25 | 39.62 | 378.33 | 254.66 | 127.88 |
| 390 | 9°45′ | 19°00.75′ | 194.29 | 10.74 | 385.73 | 42.80 | 388.09 | 261.52 | 131.38 |
| 400 | 10°00′ | 20°00.00′ | 199.19 | 11.59 | 395.15 | 46.14 | 397.84 | 268.39 | 134.90 |
| 410 | 10°15′ | 21°00.75′ | 204.08 | 12.47 | 404.52 | 49.64 | 407.55 | 275.28 | 138.44 |
| 420 | 10°30′ | 22°03.00′ | 208.97 | 13.40 | 413.82 | 53.31 | 417.24 | 282.20 | 142.01 |
| 430 | 10°45′ | 23°06.75′ | 213.84 | 14.37 | 423.06 | 57.15 | 426.90 | 289.15 | 145.59 |
| 440 | 11°00′ | 24°12.00′ | 218.70 | 15.39 | 432.22 | 61.16 | 43.652 | 296.12 | 149.21 |
| 450 | 11°15′ | 25°18.75′ | 223.54 | 16.45 | 441.30 | 65.35 | 446.11 | 303.13 | 152.85 |
| 460 | 11°30′ | 26°27.00′ | 228.38 | 17.56 | 450.29 | 69.71 | 455.66 | 310.16 | 156.52 |
| 470 | 11°45′ | 27°36.75′ | 233.19 | 18.72 | 459.20 | 74.26 | 465.17 | 317.23 | 160.22 |
| 480 | 12°00′ | 28°48.00′ | 237.99 | 19.93 | 468.01 | 78.98 | 474.63 | 324.34 | 163.95 |
| 490 | 12°15′ | 30°00.75′ | 242.78 | 21.18 | 476.72 | 83.89 | 484.05 | 331.49 | 167.73 |
| 500 | 12°30′ | 31°15.00′ | 247.54 | 22.49 | 485.33 | 88.99 | 493.42 | 338.68 | 171.54 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 2.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 12°45′ | 32°30.75′ | 252.29 | 23.84 | 493.82 | 94.27 | 502.74 | 345.92 | 175.39 |
| 520 | 13°00′ | 33°48.00′ | 257.01 | 25.25 | 502.19 | 99.74 | 512.00 | 353.20 | 179.29 |
| 530 | 13°15′ | 35°06.75′ | 261.72 | 26.71 | 510.44 | 105.40 | 521.21 | 360.54 | 183.24 |
| 540 | 13°30′ | 36°27.00′ | 266.40 | 28.22 | 518.55 | 111.24 | 530.35 | 367.94 | 187.24 |
| 550 | 13°45′ | 37°48.75′ | 271.06 | 29.78 | 526.52 | 117.28 | 539.43 | 375.40 | 191.30 |
| 560 | 14°00′ | 39°12.00′ | 275.69 | 31.40 | 534.35 | 123.50 | 548.44 | 382.92 | 195.41 |
| 570 | 14°15′ | 40°36.75′ | 280.29 | 33.07 | 542.02 | 129.92 | 557.37 | 390.51 | 199.59 |
| 580 | 14°30′ | 42°03.00′ | 284.87 | 34.80 | 549.53 | 136.52 | 566.23 | 398.17 | 203.83 |
| 590 | 14°45′ | 43°30.75′ | 289.42 | 36.58 | 556.87 | 143.31 | 575.01 | 405.91 | 208.15 |
| 600 | 15°00′ | 45°00.00′ | 293.94 | 38.42 | 564.03 | 150.29 | 583.71 | 413.74 | 212.55 |
| 610 | 15°15′ | 46°30.75′ | 298.42 | 40.31 | 571.01 | 157.46 | 592.32 | 421.65 | 217.02 |
| 620 | 15°30′ | 48°03.00′ | 302.87 | 42.26 | 577.79 | 164.80 | 600.84 | 429.66 | 221.59 |
| 630 | 15°45′ | 49°36.75′ | 307.29 | 44.26 | 584.38 | 172.33 | 609.26 | 437.78 | 226.25 |
| 640 | 16°00′ | 51°12.00′ | 311.67 | 46.32 | 590.75 | 180.04 | 617.57 | 446.00 | 231.01 |
| 650 | 16°15′ | 52°48.75′ | 316.01 | 48.44 | 596.90 | 187.92 | 625.79 | 454.33 | 235.88 |
| 660 | 16°30′ | 54°27.00′ | 320.31 | 60.61 | 602.83 | 195.97 | 633.89 | 462.79 | 240.86 |
| 670 | 16°45′ | 56°06.75′ | 324.57 | 52.84 | 608.53 | 204.19 | 641.87 | 471.39 | 245.97 |
| 680 | 17°00′ | 57°48.00′ | 328.79 | 55.13 | 613.98 | 212.57 | 649.74 | 480.12 | 251.21 |
| 690 | 17°15′ | 59°30.75′ | 332.96 | 57.48 | 619.18 | 221.11 | 657.48 | 489.01 | 256.58 |
| 700 | 17°30′ | 61°15.00′ | 337.08 | 59.87 | 624.13 | 229.80 | 665.09 | 498.05 | 262.11 |
| 710 | 17°45′ | 63°00.75′ | 341.16 | 62.33 | 628.80 | 238.64 | 672.56 | 507.27 | 267.80 |
| 720 | 18°00′ | 64°48.00′ | 345.18 | 64.84 | 633.20 | 247.62 | 679.90 | 516.68 | 273.67 |
| 730 | 18°15′ | 66°36.75′ | 349.16 | 67.41 | 637.31 | 256.74 | 687.08 | 526.28 | 279.72 |
| 740 | 18°30′ | 68°27.00′ | 353.08 | 70.03 | 641.14 | 265.98 | 694.12 | 536.10 | 285.97 |
| 750 | 18°45′ | 70°18.75′ | 356.94 | 72.70 | 644.66 | 275.33 | 700.99 | 546.14 | 292.43 |
| 760 | 19°00′ | 72°12.00′ | 360.75 | 75.43 | 647.87 | 284.80 | 707.71 | 556.43 | 299.12 |
| 770 | 19°15′ | 74°06.75′ | 364.50 | 78.21 | 650.77 | 294.37 | 714.25 | 566.98 | 306.07 |
| 780 | 19°30′ | 76°03.00′ | 368.19 | 81.05 | 653.34 | 304.04 | 720.62 | 577.82 | 313.28 |
| 790 | 19°45′ | 78°00.75′ | 371.81 | 83.93 | 655.59 | 313.78 | 726.81 | 588.96 | 320.78 |
| 800 | 20°00′ | 80°00.00′ | 375.37 | 86.86 | 657.50 | 323.60 | 732.81 | 600.44 | 328.59 |
| 810 | 20°15′ | 82°00.75′ | 378.86 | 89.85 | 659.06 | 333.47 | 738.62 | 612.27 | 336.74 |
| 820 | 20°30′ | 84°03.00′ | 382.29 | 92.88 | 660.27 | 343.40 | 744.23 | 624.48 | 345.26 |
| 830 | 20°45′ | 86°06.75′ | 385.64 | 95.96 | 661.13 | 353.36 | 749.64 | 637.12 | 354.18 |
| 840 | 21°00′ | 88°12.00′ | 388.92 | 99.08 | 661.63 | 363.35 | 754.83 | 650.21 | 363.53 |
| 850 | 21°15′ | 90°18.75′ | 392.13 | 102.25 | 661.76 | 373.35 | 759.81 | 663.79 | 373.35 |
| 860 | 21°30′ | 92°27.00′ | 395.27 | 105.46 | 661.52 | 383.34 | 764.56 | 677.92 | 383.69 |
| 870 | 21°45′ | 94°36.75′ | 398.33 | 108.71 | 660.90 | 393.32 | 769.09 | 692.63 | 394.60 |
| 880 | 22°00′ | 96°48.00′ | 401.30 | 112.00 | 659.91 | 403.27 | 773.37 | 707.99 | 406.13 |
| 890 | 22°15′ | 99°00.75′ | 404.20 | 115.33 | 658.53 | 413.18 | 777.42 | 724.07 | 418.34 |
| 900 | 22°30′ | 101°15.00′ | 407.02 | 118.69 | 656.77 | 423.02 | 781.22 | 740.92 | 431.31 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 3.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°18′ | 0°00.90′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°36′ | 0°03.60′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 0°54′ | 0°08.10′ | 15.00 | 0.01 | 30.00 | 0.02 | 30.00 | 20.00 | 10.00 |
| 40 | 1°12′ | 0°14.40′ | 20.00 | 0.01 | 40.00 | 0.06 | 40.00 | 26.67 | 13.33 |
| 50 | 1°30′ | 0°22.50′ | 25.00 | 0.03 | 50.00 | 0.11 | 50.00 | 33.33 | 16.67 |
| 60 | 1°48′ | 0°32.40′ | 30.00 | 0.05 | 60.00 | 0.19 | 60.00 | 40.00 | 20.00 |
| 70 | 2°06′ | 0°44.10′ | 35.00 | 0.07 | 70.00 | 0.30 | 70.00 | 46.67 | 23.33 |
| 80 | 2°24′ | 0°57.60′ | 40.00 | 0.11 | 80.00 | 0.45 | 80.00 | 53.33 | 26.67 |
| 90 | 2°42′ | 1°12.90′ | 45.00 | 0.16 | 90.00 | 0.64 | 90.00 | 60.00 | 30.00 |
| 100 | 3°00′ | 1°30.00′ | 50.00 | 0.22 | 99.99 | 0.87 | 100.00 | 66.67 | 33.34 |
| 110 | 3°18′ | 1°48.90′ | 55.00 | 0.29 | 109.99 | 1.16 | 110.00 | 73.34 | 36.67 |
| 120 | 3°36′ | 2°09.60′ | 60.00 | 0.38 | 119.98 | 1.51 | 119.99 | 80.01 | 40.01 |
| 130 | 3°54′ | 2°32.10′ | 65.00 | 0.48 | 129.97 | 1.92 | 129.99 | 86.68 | 43.34 |
| 140 | 4°12′ | 2°56.40′ | 69.99 | 0.60 | 139.96 | 2.39 | 139.98 | 93.35 | 46.68 |
| 150 | 4°30′ | 3°22.50′ | 74.99 | 0.74 | 149.95 | 2.94 | 149.98 | 100.02 | 50.02 |
| 160 | 4°48′ | 3°50.40′ | 79.99 | 0.89 | 159.93 | 3.57 | 159.97 | 106.69 | 53.36 |
| 170 | 5°06′ | 4°20.10′ | 84.98 | 1.07 | 169.90 | 4.29 | 169.96 | 113.37 | 56.70 |
| 180 | 5°24′ | 4°51.60′ | 89.98 | 1.27 | 179.87 | 5.09 | 179.94 | 120.05 | 60.04 |
| 190 | 5°42′ | 5°24.90′ | 94.97 | 1.50 | 189.83 | 5.98 | 189.92 | 126.73 | 63.39 |
| 200 | 6°00′ | 6°00.00′ | 99.96 | 1.74 | 199.78 | 6.98 | 199.90 | 133.41 | 66.74 |
| 210 | 6°18′ | 6°36.90′ | 104.95 | 2.02 | 209.72 | 8.07 | 209.88 | 140.10 | 70.09 |
| 220 | 6°36′ | 7°15.60′ | 109.94 | 2.32 | 219.65 | 9.28 | 219.84 | 146.79 | 73.45 |
| 230 | 6°54′ | 7°56.10′ | 114.93 | 2.65 | 229.56 | 10.60 | 229.80 | 153.49 | 76.81 |
| 240 | 7°12′ | 8°38.40′ | 119.91 | 3.01 | 239.45 | 12.04 | 239.76 | 160.19 | 80.17 |
| 250 | 7°30′ | 9°22.50′ | 124.89 | 3.41 | 249.33 | 13.61 | 249.70 | 166.90 | 83.55 |
| 260 | 7°48′ | 10°08.40′ | 129.86 | 3.83 | 259.19 | 15.30 | 259.64 | 173.62 | 86.93 |
| 270 | 8°06′ | 10°56.10′ | 134.84 | 4.29 | 269.02 | 17.13 | 269.56 | 180.34 | 90.31 |
| 280 | 8°24′ | 11°45.60′ | 139.80 | 4.78 | 278.82 | 19.10 | 279.48 | 187.08 | 93.71 |
| 290 | 8°42′ | 12°36.90′ | 144.77 | 5.31 | 288.60 | 21.21 | 289.38 | 193.83 | 97.12 |
| 300 | 9°00′ | 13°30.00′ | 149.72 | 5.88 | 298.34 | 23.47 | 299.26 | 200.58 | 100.53 |
| 310 | 9°18′ | 14°24.90′ | 154.67 | 6.48 | 308.04 | 25.88 | 309.13 | 207.36 | 103.96 |
| 320 | 9°36′ | 15°21.60′ | 159.62 | 7.13 | 317.71 | 28.45 | 318.98 | 214.14 | 107.40 |
| 330 | 9°54′ | 16°20.10′ | 164.55 | 7.82 | 327.33 | 31.18 | 328.81 | 220.94 | 110.86 |
| 340 | 10°12′ | 17°20.40′ | 169.48 | 8.55 | 336.90 | 34.08 | 338.62 | 227.76 | 114.33 |
| 350 | 10°30′ | 18°22.50′ | 174.40 | 9.32 | 346.42 | 37.14 | 348.40 | 234.60 | 117.82 |
| 360 | 10°48′ | 19°26.40′ | 179.31 | 10.14 | 355.88 | 40.38 | 358.16 | 241.46 | 121.33 |
| 370 | 11°06′ | 20°32.10′ | 184.21 | 11.00 | 365.28 | 43.80 | 367.89 | 248.35 | 124.86 |
| 380 | 11°24′ | 21°39.60′ | 189.10 | 11.91 | 374.61 | 47.40 | 377.59 | 255.26 | 128.42 |
| 390 | 11°42′ | 22°48.90′ | 193.97 | 12.87 | 383.86 | 51.18 | 387.26 | 262.19 | 132.00 |
| 400 | 12°00′ | 24°00.00′ | 198.84 | 13.88 | 393.04 | 55.15 | 396.89 | 269.16 | 135.60 |
| 410 | 12°18′ | 25°12.90′ | 203.68 | 14.93 | 402.13 | 59.32 | 406.48 | 276.16 | 139.24 |
| 420 | 12°36′ | 26°27.60′ | 208.52 | 16.04 | 411.13 | 63.68 | 416.03 | 283.19 | 142.91 |
| 430 | 12°54′ | 27°44.10′ | 213.33 | 17.20 | 420.03 | 68.23 | 425.54 | 290.27 | 146.61 |
| 440 | 13°12′ | 29°02.40′ | 218.13 | 18.41 | 428.83 | 72.98 | 435.00 | 297.38 | 150.35 |
| 450 | 13°30′ | 30°22.50′ | 222.91 | 19.68 | 437.52 | 77.94 | 444.40 | 304.54 | 154.13 |
| 460 | 13°48′ | 31°44.40′ | 227.67 | 21.00 | 446.08 | 83.10 | 453.76 | 311.75 | 157.96 |
| 470 | 14°06′ | 33°08.10′ | 232.40 | 22.38 | 454.52 | 88.46 | 463.05 | 319.00 | 161.83 |
| 480 | 14°24′ | 34°33.60′ | 237.12 | 23.82 | 462.83 | 94.03 | 472.28 | 326.32 | 165.76 |
| 490 | 14°42′ | 36°00.90′ | 241.81 | 25.31 | 470.99 | 99.81 | 481.45 | 333.69 | 169.74 |
| 500 | 15°00′ | 37°30.00′ | 246.47 | 26.86 | 479.00 | 105.79 | 490.55 | 341.13 | 173.78 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 3.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 15°18′ | 39°00.90′ | 251.11 | 28.47 | 486.85 | 111.98 | 499.57 | 348.64 | 177.88 |
| 520 | 15°36′ | 40°33.60′ | 255.72 | 30.13 | 494.54 | 118.38 | 508.51 | 356.23 | 182.06 |
| 530 | 15°54′ | 42°08.10′ | 260.29 | 31.86 | 502.05 | 124.99 | 517.37 | 363.89 | 186.30 |
| 540 | 16°12′ | 43°44.40′ | 264.84 | 33.65 | 509.37 | 131.80 | 526.14 | 371.64 | 190.63 |
| 550 | 16°30′ | 45°22.50′ | 269.35 | 35.50 | 516.49 | 138.81 | 534.82 | 379.48 | 195.04 |
| 560 | 16°48′ | 47°02.40′ | 273.83 | 37.40 | 523.41 | 146.03 | 543.40 | 387.43 | 199.54 |
| 570 | 17°06′ | 48°44.10′ | 278.26 | 39.37 | 530.12 | 153.45 | 551.88 | 395.48 | 204.15 |
| 580 | 17°24′ | 50°27.60′ | 282.66 | 41.41 | 536.60 | 161.06 | 560.25 | 403.64 | 208.85 |
| 590 | 17°42′ | 52°12.90′ | 287.02 | 43.50 | 542.85 | 168.87 | 568.51 | 411.93 | 213.68 |
| 600 | 18°00′ | 54°00.00′ | 291.33 | 45.66 | 548.85 | 176.87 | 576.65 | 420.35 | 218.62 |
| 610 | 18°18′ | 55°48.90′ | 295.60 | 47.87 | 554.60 | 185.05 | 584.66 | 428.91 | 223.70 |
| 620 | 18°36′ | 57°39.60′ | 299.82 | 50.15 | 560.09 | 193.41 | 592.54 | 437.63 | 228.92 |
| 630 | 18°54′ | 59°32.10′ | 304.00 | 52.50 | 565.30 | 201.95 | 600.28 | 446.51 | 234.29 |
| 640 | 19°12′ | 61°26.40′ | 308.12 | 54.90 | 570.22 | 210.65 | 607.89 | 455.56 | 239.83 |
| 650 | 19°30′ | 63°22.50′ | 312.19 | 57.36 | 574.85 | 219.51 | 615.34 | 464.81 | 245.55 |
| 660 | 19°48′ | 65°20.40′ | 316.20 | 59.89 | 579.18 | 228.52 | 622.64 | 474.27 | 251.46 |
| 670 | 20°06′ | 67°20.10′ | 320.16 | 62.47 | 583.20 | 237.68 | 629.77 | 483.94 | 257.57 |
| 680 | 20°24′ | 69°21.60′ | 324.05 | 65.12 | 586.89 | 246.98 | 636.74 | 493.86 | 263.92 |
| 690 | 20°42′ | 71°24.90′ | 327.89 | 67.82 | 590.24 | 256.40 | 643.53 | 504.03 | 270.50 |
| 700 | 21°00′ | 73°30.00′ | 331.66 | 70.58 | 593.26 | 265.93 | 650.13 | 514.48 | 277.35 |
| 710 | 21°18′ | 75°36.90′ | 335.36 | 73.40 | 595.92 | 275.57 | 656.55 | 525.24 | 284.49 |
| 720 | 21°36′ | 77°45.60′ | 338.99 | 76.28 | 598.22 | 285.30 | 662.77 | 536.33 | 291.94 |
| 730 | 21°54′ | 79°56.10′ | 342.56 | 79.21 | 600.16 | 295.11 | 668.79 | 547.78 | 299.72 |
| 740 | 22°12′ | 82°08.40′ | 346.05 | 82.19 | 601.72 | 304.99 | 674.60 | 559.61 | 307.88 |
| 750 | 22°30′ | 84°22.50′ | 349.47 | 85.23 | 602.89 | 314.92 | 680.18 | 571.87 | 316.44 |
| 760 | 22°48′ | 86°38.40′ | 352.81 | 88.32 | 603.67 | 324.89 | 685.55 | 584.60 | 325.45 |
| 770 | 23°06′ | 88°56.10′ | 356.07 | 91.45 | 604.06 | 334.88 | 690.67 | 597.83 | 334.94 |
| 780 | 23°24′ | 91°15.60′ | 359.25 | 94.64 | 604.04 | 344.88 | 695.56 | 611.63 | 344.96 |
| 790 | 23°42′ | 93°36.90′ | 362.35 | 97.87 | 603.62 | 354.87 | 700.20 | 626.04 | 355.57 |
| 800 | 24°00′ | 96°00.00′ | 365.36 | 101.14 | 602.78 | 364.83 | 704.59 | 641.13 | 366.84 |
| 810 | 24°18′ | 98°24.90′ | 368.28 | 104.46 | 601.53 | 374.75 | 708.71 | 656.97 | 378.83 |
| 820 | 24°36′ | 100°51.60′ | 371.12 | 107.82 | 599.85 | 384.61 | 712.56 | 673.64 | 391.62 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 3.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°21′ | 0°01.05′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°42′ | 0°04.20′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°03′ | 0°09.45′ | 15.00 | 0.01 | 30.00 | 0.03 | 30.00 | 20.00 | 10.00 |
| 40 | 1°24′ | 0°16.80′ | 20.00 | 0.02 | 40.00 | 0.07 | 40.00 | 26.67 | 13.33 |
| 50 | 1°45′ | 0°26.25′ | 25.00 | 0.03 | 50.00 | 0.13 | 50.00 | 33.33 | 16.67 |
| 60 | 2°06′ | 0°37.80′ | 30.00 | 0.05 | 60.00 | 0.22 | 60.00 | 40.00 | 20.00 |
| 70 | 2°27′ | 0°51.45′ | 35.00 | 0.09 | 70.00 | 0.35 | 70.00 | 46.67 | 23.33 |
| 80 | 2°48′ | 1°07.20′ | 40.00 | 0.13 | 80.00 | 0.52 | 80.00 | 53.33 | 26.67 |
| 90 | 3°09′ | 1°25.05′ | 45.00 | 0.19 | 89.99 | 0.74 | 90.00 | 60.00 | 30.00 |
| 100 | 3°30′ | 1°45.00′ | 50.00 | 0.25 | 99.99 | 1.02 | 100.00 | 66.67 | 33.34 |
| 110 | 3°51′ | 2°07.05′ | 55.00 | 0.34 | 109.98 | 1.35 | 109.99 | 73.34 | 36.67 |
| 120 | 4°12′ | 2°31.20′ | 60.00 | 0.44 | 119.98 | 1.76 | 119.99 | 80.01 | 40.01 |
| 130 | 4°33′ | 2°57.45′ | 64.99 | 0.56 | 129.97 | 2.24 | 129.98 | 86.68 | 43.34 |
| 140 | 4°54′ | 3°25.80′ | 69.99 | 0.70 | 139.95 | 2.79 | 139.98 | 93.35 | 46.68 |
| 150 | 5°15′ | 3°56.25′ | 74.99 | 0.86 | 149.93 | 3.43 | 149.97 | 100.02 | 50.02 |
| 160 | 5°36′ | 4°28.80′ | 79.98 | 1.04 | 159.90 | 4.17 | 159.96 | 106.70 | 53.36 |
| 170 | 5°57′ | 5°03.45′ | 84.98 | 1.25 | 169.87 | 5.00 | 169.94 | 113.38 | 56.71 |
| 180 | 6°18′ | 5°40.20′ | 89.97 | 1.48 | 179.82 | 5.93 | 179.92 | 120.06 | 60.06 |
| 190 | 6°39′ | 6°19.05′ | 94.96 | 1.75 | 189.77 | 6.98 | 189.90 | 126.75 | 63.41 |
| 200 | 7°00′ | 7°00.00′ | 99.95 | 2.04 | 199.70 | 8.14 | 199.87 | 133.44 | 66.76 |
| 210 | 7°21′ | 7°43.05′ | 104.94 | 2.36 | 209.62 | 9.42 | 209.83 | 140.13 | 70.12 |
| 220 | 7°42′ | 8°28.20′ | 109.92 | 2.71 | 219.52 | 10.82 | 219.79 | 146.83 | 73.49 |
| 230 | 8°03′ | 9°15.45′ | 114.90 | 3.09 | 229.40 | 12.36 | 229.73 | 153.54 | 76.86 |
| 240 | 8°24′ | 10°04.80′ | 119.88 | 3.51 | 239.26 | 14.04 | 239.67 | 160.26 | 80.24 |
| 250 | 8°45′ | 10°56.25′ | 124.85 | 3.97 | 249.09 | 15.87 | 249.60 | 166.99 | 83.62 |
| 260 | 9°06′ | 11°49.80′ | 129.82 | 4.47 | 258.89 | 17.84 | 259.51 | 173.72 | 87.02 |
| 270 | 9°27′ | 12°45.45′ | 134.78 | 5.00 | 268.66 | 19.97 | 269.41 | 180.47 | 90.43 |
| 280 | 9°48′ | 13°43.20′ | 139.73 | 5.58 | 278.40 | 22.26 | 279.29 | 187.23 | 93.85 |
| 290 | 10°09′ | 14°43.05′ | 144.68 | 6.19 | 288.09 | 24.71 | 289.15 | 194.01 | 97.28 |
| 300 | 10°30′ | 15°45.00′ | 149.62 | 6.85 | 297.74 | 27.34 | 298.99 | 200.80 | 100.73 |
| 310 | 10°51′ | 16°49.05′ | 154.56 | 7.56 | 307.34 | 30.14 | 308.81 | 207.61 | 104.19 |
| 320 | 11°12′ | 17°55.20′ | 159.48 | 8.31 | 316.88 | 33.13 | 318.61 | 214.44 | 107.67 |
| 330 | 11°33′ | 19°03.45′ | 164.39 | 9.11 | 326.37 | 36.30 | 328.38 | 221.29 | 111.17 |
| 340 | 11°54′ | 20°13.80′ | 169.30 | 9.96 | 335.79 | 39.66 | 338.12 | 228.16 | 114.70 |
| 350 | 12°15′ | 21°26.25′ | 174.19 | 10.86 | 345.13 | 43.22 | 347.83 | 235.07 | 118.24 |
| 360 | 12°36′ | 22°40.80′ | 179.06 | 11.81 | 354.40 | 46.97 | 357.50 | 242.00 | 121.82 |
| 370 | 12°57′ | 23°57.45′ | 183.93 | 12.81 | 363.58 | 50.93 | 367.13 | 248.96 | 125.42 |
| 380 | 13°18′ | 25°16.20′ | 188.77 | 13.87 | 372.67 | 55.09 | 376.72 | 255.96 | 129.06 |
| 390 | 13°39′ | 26°37.05′ | 193.61 | 14.98 | 381.67 | 59.47 | 386.27 | 263.00 | 132.73 |
| 400 | 14°00′ | 28°00.00′ | 198.42 | 16.15 | 390.55 | 64.06 | 395.77 | 270.08 | 136.44 |
| 410 | 14°21′ | 29°25.05′ | 203.21 | 17.38 | 399.32 | 68.86 | 405.22 | 277.21 | 140.19 |
| 420 | 14°42′ | 30°52.20′ | 207.98 | 18.66 | 407.97 | 73.88 | 414.61 | 284.38 | 143.99 |
| 430 | 15°03′ | 32°21.45′ | 212.73 | 20.01 | 416.49 | 79.12 | 423.94 | 291.61 | 147.83 |
| 440 | 15°24′ | 33°52.80′ | 217.46 | 21.41 | 424.86 | 84.58 | 433.20 | 298.89 | 151.73 |
| 450 | 15°45′ | 35°26.25′ | 222.16 | 22.88 | 433.09 | 90.27 | 442.40 | 306.24 | 155.69 |
| 460 | 16°06′ | 37°01.80′ | 226.83 | 24.41 | 441.15 | 96.18 | 451.52 | 313.66 | 159.71 |
| 470 | 16°27′ | 38°39.45′ | 231.48 | 26.00 | 449.05 | 102.32 | 460.56 | 321.15 | 163.79 |
| 480 | 16°48′ | 40°19.20′ | 236.09 | 27.66 | 456.77 | 108.67 | 469.52 | 328.71 | 167.95 |
| 490 | 17°09′ | 42°01.05′ | 240.67 | 29.38 | 464.30 | 115.26 | 478.39 | 336.37 | 172.19 |
| 500 | 17°30′ | 43°45.00′ | 245.22 | 31.16 | 471.62 | 122.06 | 487.16 | 344.12 | 176.51 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 3.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 17°51′ | 45°31.05′ | 249.73 | 33.01 | 478.74 | 129.09 | 495.84 | 351.96 | 180.93 |
| 520 | 18°12′ | 47°19.20′ | 254.20 | 34.93 | 485.63 | 136.33 | 504.41 | 359.92 | 185.44 |
| 530 | 18°33′ | 49°09.45′ | 258.63 | 36.91 | 492.29 | 143.79 | 512.86 | 367.99 | 190.07 |
| 540 | 18°54′ | 51°01.80′ | 263.02 | 38.96 | 498.71 | 151.46 | 521.20 | 376.19 | 194.81 |
| 550 | 19°15′ | 52°56.25′ | 267.36 | 41.08 | 504.87 | 159.34 | 529.41 | 384.53 | 199.67 |
| 560 | 19°36′ | 54°52.80′ | 271.65 | 43.26 | 510.76 | 167.42 | 537.50 | 393.01 | 204.68 |
| 570 | 19°57′ | 56°51.45′ | 275.90 | 45.51 | 516.37 | 175.69 | 545.44 | 401.65 | 209.83 |
| 580 | 20°18′ | 58°52.20′ | 280.09 | 47.83 | 521.69 | 184.16 | 553.24 | 410.47 | 215.14 |
| 590 | 20°39′ | 60°55.05′ | 284.23 | 50.21 | 526.71 | 192.81 | 560.89 | 419.47 | 220.63 |
| 600 | 21°00′ | 63°00.00′ | 288.31 | 52.66 | 531.41 | 201.64 | 568.38 | 428.67 | 226.30 |
| 610 | 21°21′ | 65°07.05′ | 292.33 | 55.18 | 535.78 | 210.63 | 575.70 | 438.09 | 232.18 |
| 620 | 21°42′ | 67°16.20′ | 296.29 | 57.76 | 539.82 | 219.78 | 582.84 | 447.75 | 238.28 |
| 630 | 22°03′ | 69°27.45′ | 300.18 | 60.41 | 543.51 | 229.07 | 589.81 | 457.67 | 244.63 |
| 640 | 22°24′ | 71°40.80′ | 304.01 | 63.11 | 546.83 | 238.50 | 596.58 | 467.86 | 251.23 |
| 650 | 22°45′ | 73°56.25′ | 307.77 | 65.89 | 549.79 | 248.05 | 603.16 | 478.37 | 258.13 |
| 660 | 23°06′ | 76°13.80′ | 311.46 | 68.72 | 552.36 | 257.71 | 609.53 | 489.21 | 265.34 |
| 670 | 23°27′ | 78°33.45′ | 315.07 | 71.61 | 554.55 | 267.47 | 615.68 | 500.41 | 272.90 |
| 680 | 23°48′ | 80°55.20′ | 318.61 | 74.57 | 556.33 | 277.31 | 621.61 | 512.01 | 280.83 |
| 690 | 24°09′ | 83°19.05′ | 322.06 | 77.58 | 557.70 | 287.22 | 627.31 | 524.05 | 289.18 |
| 700 | 24°30′ | 85°45.00′ | 325.44 | 80.64 | 558.65 | 297.17 | 632.77 | 536.57 | 297.99 |
| 710 | 24°51′ | 88°13.05′ | 328.72 | 83.76 | 559.18 | 307.16 | 637.99 | 549.62 | 307.30 |
| 720 | 25°12′ | 90°43.20′ | 331.93 | 86.93 | 559.27 | 317.15 | 642.94 | 563.26 | 317.18 |
| 730 | 25°33′ | 93°15.45′ | 335.04 | 90.16 | 558.93 | 327.15 | 647.63 | 577.55 | 327.68 |
| 740 | 25°54′ | 95°49.80′ | 338.06 | 93.43 | 558.13 | 337.12 | 652.04 | 592.56 | 338.87 |
| 750 | 26°15′ | 98°26.25′ | 340.99 | 96.74 | 556.89 | 347.04 | 656.17 | 608.37 | 350.83 |
| 760 | 26°36′ | 101°04.80′ | 343.82 | 100.10 | 555.20 | 356.89 | 660.01 | 625.09 | 363.67 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 4.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°24′ | 0°01.20′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°48′ | 0°04.80′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°12′ | 0°10.80′ | 15.00 | 0.01 | 30.00 | 0.03 | 30.00 | 20.00 | 10.00 |
| 40 | 1°36′ | 0°19.20′ | 20.00 | 0.02 | 40.00 | 0.07 | 40.00 | 26.67 | 13.33 |
| 50 | 2°00′ | 0°30.00′ | 25.00 | 0.04 | 50.00 | 0.15 | 50.00 | 33.33 | 16.67 |
| 60 | 2°24′ | 0°43.20′ | 30.00 | 0.06 | 60.00 | 0.25 | 60.00 | 40.00 | 20.00 |
| 70 | 2°48′ | 0°58.80′ | 35.00 | 0.10 | 70.00 | 0.40 | 70.00 | 46.67 | 23.33 |
| 80 | 3°12′ | 1°16.80′ | 40.00 | 0.15 | 80.00 | 0.60 | 80.00 | 53.33 | 26.67 |
| 90 | 3°36′ | 1°37.20′ | 45.00 | 0.21 | 89.99 | 0.85 | 90.00 | 60.00 | 30.00 |
| 100 | 4°00′ | 2°00.00′ | 50.00 | 0.29 | 99.99 | 1.16 | 99.99 | 66.67 | 33.34 |
| 110 | 4°24′ | 2°25.20′ | 55.00 | 0.39 | 109.98 | 1.55 | 109.99 | 73.34 | 36.67 |
| 120 | 4°48′ | 2°52.80′ | 59.99 | 0.50 | 119.97 | 2.01 | 119.99 | 80.01 | 40.01 |
| 130 | 5°12′ | 3°22.80′ | 64.99 | 0.64 | 129.95 | 2.56 | 129.98 | 86.68 | 43.35 |
| 140 | 5°36′ | 3°55.20′ | 69.99 | 0.80 | 139.93 | 3.19 | 139.97 | 93.36 | 46.69 |
| 150 | 6°00′ | 4°30.00′ | 74.98 | 0.98 | 149.91 | 3.93 | 149.96 | 100.03 | 50.03 |
| 160 | 6°24′ | 5°07.20′ | 79.98 | 1.19 | 159.87 | 4.76 | 159.94 | 106.71 | 53.37 |
| 170 | 6°48′ | 5°46.80′ | 84.97 | 1.43 | 169.83 | 5.71 | 169.92 | 113.39 | 56.72 |
| 180 | 7°12′ | 6°28.80′ | 89.96 | 1.70 | 179.77 | 6.78 | 179.90 | 120.08 | 60.07 |
| 190 | 7°36′ | 7°13.20′ | 94.95 | 1.99 | 189.70 | 7.97 | 189.87 | 126.77 | 63.43 |
| 200 | 8°00′ | 8°00.00′ | 99.94 | 2.33 | 199.61 | 9.30 | 199.83 | 133.47 | 66.79 |
| 210 | 8°24′ | 8°49.20′ | 104.92 | 2.69 | 209.50 | 10.76 | 209.78 | 140.17 | 70.16 |
| 220 | 8°48′ | 9°40.80′ | 109.90 | 3.09 | 219.37 | 12.36 | 219.72 | 146.89 | 73.53 |
| 230 | 9°12′ | 10°34.80′ | 114.87 | 3.53 | 229.22 | 14.12 | 229.65 | 153.61 | 76.92 |
| 240 | 9°36′ | 11°31.20′ | 119.84 | 4.02 | 239.03 | 16.04 | 239.57 | 160.34 | 80.31 |
| 250 | 10°00′ | 12°30.00′ | 124.80 | 4.54 | 248.81 | 18.12 | 249.47 | 167.08 | 83.71 |
| 260 | 10°24′ | 13°31.20′ | 129.76 | 5.10 | 258.56 | 20.37 | 259.36 | 173.84 | 87.13 |
| 270 | 10°48′ | 14°34.80′ | 134.71 | 5.71 | 268.26 | 22.80 | 269.22 | 180.61 | 90.56 |
| 280 | 11°12′ | 15°40.80′ | 139.65 | 6.37 | 277.91 | 25.41 | 279.07 | 187.40 | 94.00 |
| 290 | 11°36′ | 16°49.20′ | 144.58 | 7.07 | 287.51 | 28.20 | 288.89 | 194.21 | 97.47 |
| 300 | 12°00′ | 18°00.00′ | 149.51 | 7.83 | 297.05 | 31.20 | 298.69 | 201.04 | 100.95 |
| 310 | 12°24′ | 19°13.20′ | 154.42 | 8.63 | 306.53 | 34.39 | 308.45 | 207.90 | 104.45 |
| 320 | 12°48′ | 20°28.80′ | 159.32 | 9.49 | 315.94 | 37.78 | 318.19 | 214.78 | 107.98 |
| 330 | 13°12′ | 21°46.80′ | 164.21 | 10.40 | 325.26 | 41.38 | 327.89 | 221.69 | 111.54 |
| 340 | 13°36′ | 23°07.20′ | 169.08 | 11.37 | 334.51 | 45.20 | 337.55 | 228.63 | 115.12 |
| 350 | 14°00′ | 24°30.00′ | 173.94 | 12.39 | 343.65 | 49.24 | 347.16 | 235.61 | 118.74 |
| 360 | 14°24′ | 25°55.20′ | 178.78 | 13.47 | 352.70 | 53.50 | 356.74 | 242.62 | 122.39 |
| 370 | 14°48′ | 27°22.80′ | 183.60 | 14.61 | 361.64 | 57.98 | 366.26 | 249.68 | 126.08 |
| 380 | 15°12′ | 28°52.80′ | 188.40 | 15.82 | 370.46 | 62.70 | 375.73 | 256.79 | 129.81 |
| 390 | 15°36′ | 30°25.20′ | 193.18 | 17.08 | 379.15 | 67.64 | 385.14 | 263.95 | 133.59 |
| 400 | 16°00′ | 32°00.00′ | 197.94 | 18.41 | 387.70 | 72.82 | 394.48 | 271.16 | 137.43 |
| 410 | 16°24′ | 33°37.20′ | 202.67 | 19.80 | 396.11 | 78.24 | 403.76 | 278.43 | 141.31 |
| 420 | 16°48′ | 35°16.80′ | 207.37 | 21.26 | 404.35 | 83.90 | 412.97 | 285.77 | 145.26 |
| 430 | 17°12′ | 36°58.80′ | 212.05 | 22.79 | 412.43 | 89.79 | 422.09 | 293.18 | 149.27 |
| 440 | 17°36′ | 38°43.20′ | 216.69 | 24.38 | 420.33 | 95.93 | 431.13 | 300.67 | 153.36 |
| 450 | 18°00′ | 40°30.00′ | 221.30 | 26.04 | 428.03 | 102.30 | 440.09 | 308.25 | 157.52 |
| 460 | 18°24′ | 42°19.20′ | 225.88 | 27.77 | 435.53 | 108.92 | 448.94 | 315.91 | 161.77 |
| 470 | 18°48′ | 44°10.80′ | 230.42 | 29.57 | 442.81 | 115.77 | 457.70 | 323.68 | 166.12 |
| 480 | 19°12′ | 46°04.80′ | 234.92 | 31.44 | 449.87 | 122.86 | 466.34 | 331.56 | 170.56 |
| 490 | 19°36′ | 48°01.20′ | 239.37 | 33.38 | 456.68 | 130.17 | 474.87 | 339.56 | 175.11 |
| 500 | 20°00′ | 50°00.00′ | 243.79 | 35.39 | 463.24 | 137.72 | 483.28 | 347.68 | 179.78 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 4.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 20°24′ | 52°01.20′ | 248.15 | 37.47 | 469.53 | 145.49 | 491.56 | 355.94 | 184.58 |
| 520 | 20°48′ | 54°04.80′ | 252.47 | 39.62 | 475.55 | 153.48 | 499.70 | 364.36 | 189.52 |
| 530 | 21°12′ | 56°10.80′ | 256.73 | 41.85 | 481.26 | 161.69 | 507.70 | 372.94 | 194.62 |
| 540 | 21°36′ | 58°19.20′ | 260.94 | 44.15 | 486.67 | 170.10 | 515.54 | 381.70 | 199.88 |
| 550 | 22°00′ | 60°30.00′ | 265.09 | 46.51 | 491.76 | 178.71 | 523.23 | 390.66 | 205.32 |
| 560 | 22°24′ | 62°43.20′ | 269.18 | 48.95 | 496.52 | 187.50 | 530.74 | 399.82 | 210.97 |
| 570 | 22°48′ | 64°58.80′ | 273.21 | 51.46 | 500.92 | 196.48 | 538.08 | 409.22 | 216.82 |
| 580 | 23°12′ | 67°16.80′ | 277.17 | 54.04 | 504.97 | 205.62 | 545.23 | 418.87 | 222.92 |
| 590 | 23°36′ | 69°37.20′ | 281.06 | 56.69 | 508.64 | 214.92 | 552.19 | 428.80 | 229.27 |
| 600 | 24°00′ | 72°00.00′ | 284.88 | 59.40 | 511.93 | 224.36 | 558.94 | 439.03 | 235.91 |
| 610 | 24°24′ | 74°25.20′ | 288.63 | 62.19 | 514.82 | 233.94 | 565.48 | 449.59 | 242.86 |
| 620 | 24°48′ | 76°52.80′ | 292.30 | 65.04 | 517.30 | 243.62 | 571.80 | 460.52 | 250.15 |
| 630 | 25°12′ | 79°22.80′ | 295.89 | 67.95 | 519.36 | 253.41 | 577.88 | 471.84 | 257.83 |
| 640 | 25°36′ | 81°55.20′ | 299.39 | 70.92 | 520.98 | 263.23 | 583.73 | 483.61 | 265.92 |
| 650 | 26°00′ | 84°30.00′ | 302.81 | 73.96 | 522.16 | 273.20 | 589.32 | 495.86 | 274.47 |
| 660 | 26°24′ | 87°07.20′ | 306.14 | 77.05 | 522.90 | 283.18 | 594.65 | 508.65 | 283.54 |
| 670 | 26°48′ | 89°46.80′ | 309.38 | 80.20 | 523.17 | 293.17 | 599.71 | 522.04 | 293.17 |
| 680 | 27°12′ | 92°28.80′ | 312.52 | 83.41 | 522.97 | 303.17 | 604.49 | 536.10 | 303.45 |
| 690 | 27°36′ | 95°13.20′ | 315.57 | 86.67 | 522.30 | 313.15 | 608.98 | 550.91 | 314.45 |
| 700 | 28°00′ | 98°00.00′ | 318.51 | 89.97 | 521.15 | 323.08 | 613.17 | 566.55 | 326.25 |
| 710 | 28°24′ | 100°49.20′ | 321.36 | 93.33 | 519.51 | 332.94 | 617.05 | 583.15 | 338.97 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 4.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°27′ | 0°01.35′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 0°54′ | 0°05.40′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°21′ | 0°12.15′ | 15.00 | 0.01 | 30.00 | 0.04 | 30.00 | 20.00 | 10.00 |
| 40 | 1°48′ | 0°21.60′ | 20.00 | 0.02 | 40.00 | 0.08 | 40.00 | 26.67 | 13.33 |
| 50 | 2°15′ | 0°33.75′ | 25.00 | 0.04 | 50.00 | 0.16 | 50.00 | 33.33 | 16.67 |
| 60 | 2°42′ | 0°48.60′ | 30.00 | 0.07 | 60.00 | 0.28 | 60.00 | 40.00 | 20.00 |
| 70 | 3°09′ | 1°06.15′ | 35.00 | 0.11 | 70.00 | 0.45 | 70.00 | 46.67 | 23.33 |
| 80 | 3°36′ | 1°26.40′ | 40.00 | 0.17 | 79.99 | 0.67 | 80.00 | 53.34 | 26.67 |
| 90 | 4°03′ | 1°49.35′ | 45.00 | 0.24 | 89.99 | 0.95 | 90.00 | 60.00 | 30.00 |
| 100 | 4°30′ | 2°15.00′ | 50.00 | 0.33 | 99.98 | 1.31 | 99.99 | 66.67 | 33.34 |
| 110 | 4°57′ | 2°43.35′ | 55.00 | 0.44 | 109.98 | 1.74 | 109.99 | 73.34 | 36.67 |
| 120 | 5°24′ | 3°14.40′ | 59.99 | 0.57 | 119.96 | 2.26 | 119.98 | 80.01 | 40.01 |
| 130 | 5°51′ | 3°48.15′ | 64.99 | 0.72 | 129.94 | 2.87 | 129.97 | 86.69 | 43.35 |
| 140 | 6°18′ | 4°24.60′ | 69.99 | 0.90 | 139.92 | 3.59 | 139.96 | 93.36 | 46.69 |
| 150 | 6°45′ | 5°03.75′ | 74.98 | 1.10 | 149.88 | 4.42 | 149.95 | 100.04 | 50.04 |
| 160 | 7°12′ | 5°45.60′ | 79.97 | 1.34 | 159.84 | 5.36 | 159.93 | 106.72 | 53.38 |
| 170 | 7°39′ | 6°30.15′ | 84.96 | 1.61 | 169.78 | 6.43 | 169.90 | 113.41 | 56.74 |
| 180 | 8°06′ | 7°17.40′ | 89.95 | 1.91 | 179.71 | 7.63 | 179.87 | 120.10 | 60.09 |
| 190 | 8°33′ | 8°07.35′ | 94.94 | 2.24 | 189.62 | 8.97 | 189.83 | 126.80 | 63.45 |
| 200 | 9°00′ | 9°00.00′ | 99.92 | 2.62 | 199.51 | 10.45 | 199.78 | 133.51 | 66.82 |
| 210 | 9°27′ | 9°55.35′ | 104.90 | 3.03 | 209.37 | 12.10 | 209.72 | 140.22 | 70.20 |
| 220 | 9°54′ | 10°53.40′ | 109.87 | 3.48 | 219.21 | 13.90 | 219.65 | 146.95 | 73.59 |
| 230 | 10°21′ | 11°54.15′ | 114.83 | 3.98 | 229.01 | 15.88 | 229.56 | 153.68 | 76.98 |
| 240 | 10°48′ | 12°57.60′ | 119.80 | 4.52 | 238.77 | 18.03 | 239.45 | 160.43 | 80.39 |
| 250 | 11°15′ | 14°03.75′ | 124.75 | 5.10 | 248.50 | 20.37 | 249.33 | 167.20 | 83.81 |
| 260 | 11°42′ | 15°12.60′ | 129.70 | 5.74 | 258.17 | 22.89 | 259.19 | 173.98 | 87.25 |
| 270 | 12°09′ | 16°24.15′ | 134.63 | 6.42 | 267.80 | 25.61 | 269.02 | 180.78 | 90.71 |
| 280 | 12°36′ | 17°38.40′ | 139.56 | 7.16 | 277.36 | 28.54 | 278.82 | 187.60 | 94.18 |
| 290 | 13°03′ | 18°55.35′ | 144.47 | 7.95 | 286.85 | 31.68 | 288.60 | 194.45 | 97.68 |
| 300 | 13°30′ | 20°15.00′ | 149.38 | 8.80 | 296.27 | 35.03 | 298.34 | 201.32 | 101.21 |
| 310 | 13°57′ | 21°37.35′ | 154.27 | 9.70 | 305.61 | 38.60 | 308.04 | 208.23 | 104.76 |
| 320 | 14°24′ | 23°02.40′ | 159.14 | 10.66 | 314.86 | 42.40 | 317.71 | 215.17 | 108.34 |
| 330 | 14°51′ | 24°30.15′ | 164.00 | 11.68 | 324.02 | 46.43 | 327.33 | 222.15 | 111.95 |
| 340 | 15°18′ | 26°00.60′ | 168.84 | 12.77 | 333.06 | 50.70 | 336.90 | 229.16 | 115.61 |
| 350 | 15°45′ | 27°33.75′ | 173.66 | 13.92 | 341.99 | 55.20 | 346.41 | 236.23 | 119.30 |
| 360 | 16°12′ | 29°09.60′ | 178.46 | 15.13 | 350.79 | 59.95 | 355.87 | 243.34 | 123.04 |
| 370 | 16°39′ | 30°48.15′ | 183.23 | 16.41 | 359.45 | 64.95 | 365.27 | 250.51 | 126.83 |
| 380 | 17°06′ | 32°29.40′ | 187.98 | 17.75 | 367.96 | 70.19 | 374.60 | 257.74 | 130.68 |
| 390 | 17°33′ | 34°13.35′ | 192.70 | 19.17 | 376.31 | 75.69 | 383.85 | 265.03 | 134.59 |
| 400 | 18°00′ | 36°00.00′ | 197.40 | 20.65 | 384.49 | 81.44 | 393.03 | 272.40 | 138.56 |
| 410 | 18°27′ | 37°49.35′ | 202.06 | 22.21 | 392.49 | 87.45 | 402.11 | 279.84 | 142.61 |
| 420 | 18°54′ | 39°41.40′ | 206.69 | 23.83 | 400.29 | 93.71 | 411.11 | 287.38 | 146.73 |
| 430 | 19°21′ | 41°36.15′ | 211.28 | 25.53 | 407.88 | 100.22 | 420.01 | 295.01 | 150.94 |
| 440 | 19°48′ | 43°33.60′ | 215.83 | 27.31 | 415.24 | 106.99 | 428.80 | 302.74 | 155.25 |
| 450 | 20°15′ | 45°33.75′ | 220.34 | 29.16 | 422.36 | 114.00 | 437.48 | 310.58 | 159.66 |
| 460 | 20°42′ | 47°36.60′ | 224.81 | 31.08 | 429.24 | 121.26 | 446.04 | 318.55 | 164.19 |
| 470 | 21°09′ | 49°42.15′ | 229.23 | 33.08 | 435.84 | 128.77 | 454.47 | 326.65 | 168.84 |
| 480 | 21°36′ | 51°50.40′ | 233.60 | 35.15 | 442.17 | 136.52 | 462.76 | 334.89 | 173.62 |
| 490 | 22°03′ | 54°01.35′ | 237.92 | 37.30 | 448.20 | 144.50 | 470.91 | 343.30 | 178.56 |
| 500 | 22°30′ | 56°15.00′ | 242.18 | 39.53 | 453.91 | 152.70 | 478.91 | 351.88 | 183.65 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 4.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 22°57′ | 58°31.35′ | 246.38 | 41.83 | 459.30 | 161.12 | 486.74 | 360.65 | 188.92 |
| 520 | 23°24′ | 60°50.40′ | 250.53 | 44.20 | 464.35 | 169.75 | 494.41 | 369.63 | 194.39 |
| 530 | 23°51′ | 63°12.15′ | 254.61 | 46.66 | 469.04 | 178.58 | 501.89 | 378.84 | 200.07 |
| 540 | 24°18′ | 65°36.60′ | 258.62 | 49.18 | 473.36 | 187.60 | 509.18 | 388.30 | 205.98 |
| 550 | 24°45′ | 68°03.75′ | 262.56 | 51.78 | 477.30 | 196.79 | 516.27 | 398.04 | 212.16 |
| 560 | 25°12′ | 70°33.60′ | 266.43 | 54.46 | 480.83 | 206.15 | 523.16 | 408.07 | 218.61 |
| 570 | 25°39′ | 73°06.15′ | 270.22 | 57.20 | 483.95 | 215.65 | 529.82 | 418.44 | 225.38 |
| 580 | 26°06′ | 75°41.40′ | 273.92 | 60.01 | 486.64 | 225.28 | 536.25 | 429.17 | 232.49 |
| 590 | 26°33′ | 78°19.35′ | 277.55 | 62.90 | 488.89 | 235.02 | 542.44 | 440.31 | 239.99 |
| 600 | 27°00′ | 81°00.00′ | 281.09 | 65.85 | 490.68 | 244.86 | 548.38 | 451.90 | 247.91 |
| 610 | 27°27′ | 83°43.35′ | 284.54 | 68.86 | 492.01 | 254.77 | 554.06 | 463.99 | 256.31 |
| 620 | 27°54′ | 86°29.40′ | 287.89 | 71.94 | 492.87 | 264.73 | 559.46 | 476.63 | 265.23 |
| 630 | 28°21′ | 89°18.15′ | 291.15 | 75.08 | 493.23 | 274.72 | 564.58 | 489.89 | 274.74 |
| 640 | 28°48′ | 92°09.60′ | 294.30 | 78.28 | 493.11 | 284.72 | 569.40 | 503.84 | 284.92 |
| 650 | 29°15′ | 95°03.75′ | 297.36 | 81.53 | 492.48 | 294.70 | 573.92 | 518.58 | 295.86 |
| 660 | 29°42′ | 98°00.60′ | 300.31 | 84.84 | 491.34 | 304.64 | 578.11 | 534.21 | 307.64 |
| 670 | 30°09′ | 101°00.15′ | 303.15 | 88.19 | 489.69 | 314.50 | 581.98 | 550.83 | 320.39 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 5.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°30′ | 0°01.50′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°00′ | 0°06.00′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°30′ | 0°13.50′ | 15.00 | 0.01 | 30.00 | 0.04 | 30.00 | 20.00 | 10.00 |
| 40 | 2°00′ | 0°24.00′ | 20.00 | 0.02 | 40.00 | 0.09 | 40.00 | 26.67 | 13.33 |
| 50 | 2°30′ | 0°37.50′ | 25.00 | 0.05 | 50.00 | 0.18 | 50.00 | 33.33 | 16.67 |
| 60 | 3°00′ | 0°54.00′ | 30.00 | 0.08 | 60.00 | 0.31 | 60.00 | 40.00 | 20.00 |
| 70 | 3°30′ | 1°13.50′ | 35.00 | 0.12 | 70.00 | 0.50 | 70.00 | 46.67 | 23.33 |
| 80 | 4°00′ | 1°36.00′ | 40.00 | 0.19 | 79.99 | 0.74 | 80.00 | 53.34 | 26.67 |
| 90 | 4°30′ | 2°01.50′ | 45.00 | 0.27 | 89.99 | 1.06 | 90.00 | 60.00 | 30.00 |
| 100 | 5°00′ | 2°30.00′ | 50.00 | 0.36 | 99.98 | 1.45 | 99.99 | 66.67 | 33.34 |
| 110 | 5°30′ | 3°01.50′ | 54.99 | 0.48 | 109.97 | 1.94 | 109.99 | 73.34 | 36.68 |
| 120 | 6°00′ | 3°36.00′ | 59.99 | 0.63 | 119.95 | 2.51 | 119.98 | 80.02 | 40.02 |
| 130 | 6°30′ | 4°13.50′ | 64.99 | 0.80 | 129.93 | 3.19 | 129.97 | 86.69 | 43.36 |
| 140 | 7°00′ | 4°54.00′ | 69.98 | 1.00 | 139.90 | 3.99 | 139.95 | 93.37 | 46.70 |
| 150 | 7°30′ | 5°37.50′ | 74.98 | 1.23 | 149.86 | 4.91 | 149.94 | 100.05 | 50.05 |
| 160 | 8°00′ | 6°24.00′ | 79.97 | 1.49 | 159.80 | 5.95 | 159.91 | 106.74 | 53.40 |
| 170 | 8°30′ | 7°13.50′ | 84.95 | 1.79 | 169.73 | 7.14 | 169.88 | 113.43 | 56.75 |
| 180 | 9°00′ | 8°06.00′ | 89.94 | 2.12 | 179.64 | 8.47 | 179.84 | 120.13 | 60.11 |
| 190 | 9°30′ | 9°01.50′ | 94.92 | 2.49 | 189.53 | 9.96 | 189.79 | 126.83 | 63.48 |
| 200 | 10°00′ | 10°00.00′ | 99.90 | 2.91 | 199.39 | 11.61 | 199.73 | 133.55 | 66.86 |
| 210 | 10°30′ | 11°01.50′ | 104.87 | 3.36 | 209.22 | 13.43 | 209.65 | 140.27 | 70.25 |
| 220 | 11°00′ | 12°06.00′ | 109.84 | 3.87 | 219.02 | 15.44 | 219.56 | 147.01 | 73.65 |
| 230 | 11°30′ | 13°13.50′ | 114.80 | 4.42 | 228.78 | 17.63 | 229.46 | 153.76 | 77.06 |
| 240 | 12°00′ | 14°24.00′ | 119.75 | 5.02 | 238.49 | 20.02 | 239.33 | 160.53 | 80.48 |
| 250 | 12°30′ | 15°37.50′ | 124.69 | 5.67 | 248.15 | 22.61 | 249.17 | 167.32 | 83.93 |
| 260 | 13°00′ | 16°54.00′ | 129.62 | 6.37 | 257.75 | 25.40 | 259.00 | 174.13 | 87.39 |
| 270 | 13°30′ | 18°13.50′ | 134.55 | 7.13 | 267.28 | 28.42 | 268.79 | 180.96 | 90.88 |
| 280 | 14°00′ | 19°36.00′ | 139.46 | 7.95 | 276.74 | 31.66 | 278.55 | 187.82 | 94.39 |
| 290 | 14°30′ | 21°01.50′ | 144.35 | 8.83 | 286.12 | 35.13 | 288.27 | 194.71 | 97.92 |
| 300 | 15°00′ | 22°30.00′ | 149.23 | 9.76 | 295.41 | 38.84 | 297.95 | 201.64 | 101.49 |
| 310 | 15°30′ | 24°01.50′ | 154.10 | 10.76 | 304.59 | 42.79 | 307.58 | 208.60 | 105.10 |
| 320 | 16°00′ | 25°36.00′ | 158.94 | 11.83 | 313.67 | 46.98 | 317.17 | 215.61 | 108.74 |
| 330 | 16°30′ | 27°13.50′ | 163.77 | 12.96 | 322.63 | 51.43 | 326.70 | 222.66 | 112.42 |
| 340 | 17°00′ | 28°54.00′ | 168.57 | 14.16 | 331.45 | 56.13 | 336.17 | 229.76 | 116.15 |
| 350 | 17°30′ | 30°37.50′ | 173.35 | 15.43 | 340.13 | 61.10 | 345.58 | 236.92 | 119.94 |
| 360 | 18°00′ | 32°24.00′ | 178.10 | 16.77 | 348.66 | 66.32 | 354.91 | 244.15 | 123.78 |
| 370 | 18°30′ | 34°13.50′ | 182.82 | 18.19 | 357.01 | 71.82 | 364.17 | 251.44 | 127.68 |
| 380 | 19°00′ | 36°06.00′ | 187.51 | 19.67 | 365.19 | 77.57 | 373.34 | 258.81 | 131.66 |
| 390 | 19°30′ | 38°01.50′ | 192.17 | 21.23 | 373.17 | 83.60 | 382.42 | 266.26 | 135.71 |
| 400 | 20°00′ | 40°00.00′ | 196.79 | 22.87 | 380.94 | 89.89 | 391.40 | 273.81 | 139.85 |
| 410 | 20°30′ | 42°01.50′ | 201.38 | 24.58 | 388.49 | 96.45 | 400.28 | 281.46 | 144.08 |
| 420 | 21°00′ | 44°06.00′ | 205.92 | 26.38 | 395.79 | 103.28 | 409.05 | 289.21 | 148.41 |
| 430 | 21°30′ | 46°13.50′ | 210.42 | 28.25 | 402.84 | 110.37 | 417.69 | 297.09 | 152.86 |
| 440 | 22°00′ | 48°24.00′ | 214.87 | 30.20 | 409.62 | 117.72 | 426.20 | 305.10 | 157.42 |
| 450 | 22°30′ | 50°37.50′ | 219.27 | 32.23 | 416.12 | 125.33 | 434.58 | 313.26 | 162.13 |
| 460 | 23°00′ | 52°54.00′ | 223.62 | 34.33 | 422.30 | 133.18 | 442.81 | 321.58 | 166.98 |
| 470 | 23°30′ | 55°13.50′ | 227.91 | 36.52 | 428.17 | 141.28 | 450.88 | 330.08 | 171.99 |
| 480 | 24°00′ | 57°36.00′ | 232.14 | 38.79 | 433.71 | 149.60 | 458.78 | 338.76 | 177.19 |
| 490 | 24°30′ | 60°01.50′ | 236.31 | 41.14 | 438.89 | 158.16 | 466.51 | 347.66 | 182.58 |
| 500 | 25°00′ | 62°30.00′ | 240.41 | 43.57 | 443.69 | 166.93 | 474.05 | 356.80 | 188.19 |

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a = 5.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 25°30′ | 65°01.50′ | 244.44 | 46.07 | 448.11 | 175.89 | 481.40 | 366.19 | 194.04 |
| 520 | 26°00′ | 67°36.00′ | 248.39 | 48.66 | 452.13 | 185.05 | 488.54 | 375.86 | 200.15 |
| 530 | 26°30′ | 70°13.50′ | 252.27 | 51.32 | 455.73 | 194.38 | 495.45 | 385.85 | 206.56 |
| 540 | 27°00′ | 72°54.00′ | 256.07 | 54.06 | 458.89 | 203.87 | 502.14 | 396.18 | 213.29 |
| 550 | 27°30′ | 75°37.50′ | 259.78 | 56.87 | 461.61 | 213.49 | 508.58 | 406.89 | 220.39 |
| 560 | 28°00′ | 78°24.00′ | 263.41 | 59.75 | 463.85 | 223.23 | 514.78 | 418.03 | 227.89 |
| 570 | 28°30′ | 81°13.50′ | 266.94 | 62.71 | 465.62 | 233.07 | 520.70 | 429.65 | 235.83 |
| 580 | 29°00′ | 84°06.00′ | 270.38 | 65.73 | 466.90 | 242.99 | 526.35 | 441.79 | 244.29 |
| 590 | 29°30′ | 87°01.50′ | 273.71 | 68.82 | 467.68 | 252.96 | 531.70 | 454.53 | 253.30 |
| 600 | 30°00′ | 90°00.00′ | 276.95 | 71.97 | 467.94 | 262.96 | 536.76 | 467.94 | 262.96 |
| 610 | 30°30′ | 93°01.50′ | 280.08 | 75.18 | 467.67 | 272.95 | 541.50 | 482.10 | 273.33 |
| 620 | 31°00′ | 96°06.00′ | 283.10 | 78.45 | 466.88 | 282.92 | 545.91 | 497.11 | 284.53 |
| 630 | 31°30′ | 99°13.50′ | 286.01 | 81.78 | 465.55 | 292.83 | 549.98 | 513.10 | 296.66 |
| 640 | 32°00′ | 102°24.00′ | 288.80 | 85.15 | 463.67 | 302.65 | 553.70 | 530.21 | 309.88 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 5.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°33′ | 0°01.65′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°06′ | 0°06.60′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°39′ | 0°14.85′ | 15.00 | 0.01 | 30.00 | 0.04 | 30.00 | 20.00 | 10.00 |
| 40 | 2°12′ | 0°26.40′ | 20.00 | 0.03 | 40.00 | 0.10 | 40.00 | 26.67 | 13.33 |
| 50 | 2°45′ | 0°41.25′ | 25.00 | 0.05 | 50.00 | 0.20 | 50.00 | 33.33 | 16.67 |
| 60 | 3°18′ | 0°59.40′ | 30.00 | 0.09 | 60.00 | 0.35 | 60.00 | 40.00 | 20.00 |
| 70 | 3°51′ | 1°20.85′ | 35.00 | 0.14 | 70.00 | 0.55 | 70.00 | 46.67 | 23.33 |
| 80 | 4°24′ | 1°45.60′ | 40.00 | 0.20 | 79.99 | 0.82 | 80.00 | 53.34 | 26.67 |
| 90 | 4°57′ | 2°13.65′ | 45.00 | 0.29 | 89.99 | 1.17 | 89.99 | 60.00 | 30.00 |
| 100 | 5°30′ | 2°45.00′ | 50.00 | 0.40 | 99.98 | 1.60 | 99.99 | 66.67 | 33.34 |
| 110 | 6°03′ | 3°19.65′ | 54.99 | 0.53 | 109.96 | 2.13 | 109.98 | 73.35 | 36.68 |
| 120 | 6°36′ | 3°57.60′ | 59.99 | 0.69 | 119.94 | 2.76 | 119.97 | 80.02 | 40.02 |
| 130 | 7°09′ | 4°38.85′ | 64.99 | 0.88 | 129.91 | 3.51 | 129.96 | 86.70 | 43.36 |
| 140 | 7°42′ | 5°23.40′ | 69.98 | 1.10 | 139.88 | 4.39 | 139.94 | 93.38 | 46.71 |
| 150 | 8°15′ | 6°11.25′ | 74.97 | 1.35 | 149.83 | 5.40 | 149.92 | 100.06 | 50.06 |
| 160 | 8°48′ | 7°02.40′ | 79.96 | 1.64 | 159.76 | 6.55 | 159.89 | 106.75 | 53.41 |
| 170 | 9°21′ | 7°56.85′ | 84.95 | 1.96 | 169.67 | 7.85 | 169.85 | 113.45 | 56.77 |
| 180 | 9°54′ | 8°54.60′ | 89.93 | 2.33 | 179.57 | 9.31 | 179.81 | 120.15 | 60.14 |
| 190 | 10°27′ | 9°55.65′ | 94.91 | 2.74 | 189.43 | 10.95 | 189.75 | 126.87 | 63.51 |
| 200 | 11°00′ | 11°00.00′ | 99.88 | 3.20 | 199.26 | 12.77 | 199.67 | 133.59 | 66.90 |
| 210 | 11°33′ | 12°07.65′ | 104.84 | 3.70 | 209.06 | 14.77 | 209.58 | 140.33 | 70.30 |
| 220 | 12°06′ | 13°18.60′ | 109.80 | 4.25 | 218.82 | 16.97 | 219.47 | 147.08 | 73.71 |
| 230 | 12°39′ | 14°32.85′ | 114.75 | 4.86 | 228.52 | 19.38 | 229.34 | 153.85 | 77.14 |
| 240 | 13°12′ | 15°50.40′ | 119.69 | 5.51 | 238.17 | 22.00 | 239.19 | 160.65 | 80.59 |
| 250 | 13°45′ | 17°11.25′ | 124.63 | 6.23 | 247.76 | 24.84 | 249.00 | 167.46 | 84.05 |
| 260 | 14°18′ | 18°35.40′ | 129.55 | 7.00 | 257.28 | 27.91 | 258.79 | 174.30 | 87.56 |
| 270 | 14°51′ | 20°02.85′ | 134.45 | 7.84 | 266.71 | 31.22 | 268.53 | 181.17 | 91.06 |
| 280 | 15°24′ | 21°33.60′ | 139.34 | 8.74 | 276.06 | 34.77 | 278.24 | 188.07 | 94.61 |
| 290 | 15°57′ | 23°07.65′ | 144.22 | 9.70 | 285.31 | 38.57 | 287.91 | 195.01 | 98.19 |
| 300 | 16°30′ | 24°45.00′ | 149.07 | 10.73 | 294.45 | 42.62 | 297.52 | 201.99 | 101.81 |
| 310 | 17°03′ | 26°25.65′ | 153.91 | 11.83 | 303.47 | 46.94 | 307.08 | 209.02 | 105.47 |
| 320 | 17°36′ | 28°09.60′ | 158.72 | 12.99 | 312.36 | 51.53 | 316.58 | 216.10 | 109.18 |
| 330 | 18°09′ | 29°56.85′ | 163.51 | 14.23 | 321.10 | 56.38 | 326.01 | 223.23 | 112.94 |
| 340 | 18°42′ | 31°47.40′ | 168.27 | 15.55 | 329.68 | 61.51 | 335.37 | 230.43 | 116.76 |
| 350 | 19°15′ | 33°41.25′ | 173.00 | 16.94 | 338.09 | 66.92 | 344.65 | 237.70 | 120.65 |
| 360 | 19°48′ | 35°38.40′ | 177.70 | 18.41 | 346.32 | 72.61 | 353.85 | 245.05 | 124.61 |
| 370 | 20°21′ | 37°38.85′ | 182.37 | 19.95 | 354.34 | 78.57 | 362.95 | 252.49 | 128.64 |
| 380 | 20°54′ | 39°42.60′ | 187.00 | 21.57 | 362.15 | 84.82 | 371.95 | 260.02 | 132.76 |
| 390 | 21°27′ | 41°49.65′ | 191.59 | 23.28 | 369.72 | 91.35 | 380.84 | 267.65 | 136.98 |
| 400 | 22°00′ | 44°00.00′ | 196.13 | 25.07 | 377.05 | 98.16 | 389.61 | 275.40 | 141.31 |
| 410 | 22°33′ | 46°13.65′ | 200.63 | 26.93 | 384.10 | 105.24 | 398.26 | 283.27 | 145.75 |
| 420 | 23°06′ | 48°30.60′ | 205.08 | 28.89 | 390.88 | 112.60 | 406.77 | 291.29 | 150.32 |
| 430 | 23°39′ | 50°50.85′ | 209.48 | 30.92 | 397.35 | 120.22 | 415.14 | 299.46 | 155.03 |
| 440 | 24°12′ | 53°14.40′ | 213.82 | 33.04 | 403.50 | 128.11 | 423.35 | 307.80 | 159.90 |
| 450 | 24°45′ | 55°41.25′ | 218.10 | 35.24 | 409.31 | 136.24 | 431.39 | 316.33 | 164.95 |
| 460 | 25°18′ | 58°11.40′ | 222.31 | 37.53 | 414.77 | 144.62 | 439.26 | 325.06 | 170.18 |
| 470 | 25°51′ | 60°44.85′ | 226.46 | 39.90 | 419.85 | 153.24 | 446.94 | 334.02 | 175.63 |
| 480 | 26°24′ | 63°21.60′ | 230.54 | 42.35 | 424.53 | 162.07 | 454.42 | 343.23 | 181.32 |
| 490 | 26°57′ | 66°01.65′ | 234.55 | 44.89 | 428.81 | 171.11 | 461.69 | 352.72 | 187.26 |
| 500 | 27°30′ | 68°45.00′ | 238.47 | 47.50 | 432.65 | 180.34 | 468.73 | 362.52 | 193.49 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 5.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 28°03′ | 71°31.65′ | 242.31 | 50.20 | 436.05 | 189.74 | 475.54 | 372.67 | 200.05 |
| 520 | 28°36′ | 74°21.60′ | 246.07 | 52.97 | 438.98 | 199.30 | 482.11 | 383.19 | 206.96 |
| 530 | 29°09′ | 77°14.85′ | 249.73 | 55.83 | 441.44 | 208.99 | 488.41 | 394.14 | 214.28 |
| 540 | 29°42′ | 80°11.40′ | 253.30 | 58.75 | 443.39 | 218.80 | 494.44 | 405.56 | 222.05 |
| 550 | 30°15′ | 83°11.25′ | 256.77 | 61.75 | 444.84 | 228.69 | 500.18 | 417.52 | 230.32 |
| 560 | 30°48′ | 86°14.40′ | 260.14 | 64.82 | 445.76 | 238.65 | 505.63 | 430.08 | 239.16 |
| 570 | 31°21′ | 89°20.85′ | 263.40 | 67.96 | 446.15 | 248.64 | 510.75 | 443.32 | 248.66 |
| 580 | 31°54′ | 92°30.60′ | 266.55 | 71.16 | 445.99 | 258.64 | 515.56 | 457.32 | 258.89 |
| 590 | 32°27′ | 95°43.65′ | 269.58 | 74.42 | 445.27 | 268.61 | 520.02 | 472.21 | 269.96 |
| 600 | 33°00′ | 99°00.00′ | 272.50 | 77.74 | 443.99 | 278.53 | 524.12 | 488.10 | 282.00 |
| 610 | 33°33′ | 102°19.65′ | 275.30 | 81.12 | 442.14 | 288.35 | 527.86 | 505.16 | 295.16 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 6.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°36′ | 0°01.80′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°12′ | 0°07.20′ | 10.00 | 0.00 | 20.00 | 0.01 | 20.00 | 13.33 | 6.67 |
| 30 | 1°48′ | 0°16.20′ | 15.00 | 0.01 | 30.00 | 0.05 | 30.00 | 20.00 | 10.00 |
| 40 | 2°24′ | 0°28.80′ | 20.00 | 0.03 | 40.00 | 0.11 | 40.00 | 26.67 | 13.33 |
| 50 | 3°00′ | 0°45.00′ | 25.00 | 0.05 | 50.00 | 0.22 | 50.00 | 33.33 | 16.67 |
| 60 | 3°36′ | 1°04.80′ | 30.00 | 0.09 | 60.00 | 0.38 | 60.00 | 40.00 | 20.00 |
| 70 | 4°12′ | 1°28.20′ | 35.00 | 0.15 | 70.00 | 0.60 | 70.00 | 46.67 | 23.33 |
| 80 | 4°48′ | 1°55.20′ | 40.00 | 0.22 | 79.99 | 0.89 | 80.00 | 53.34 | 26.67 |
| 90 | 5°24′ | 2°25.80′ | 45.00 | 0.32 | 89.98 | 1.27 | 89.99 | 60.01 | 30.01 |
| 100 | 6°00′ | 3°00.00′ | 50.00 | 0.44 | 99.97 | 1.74 | 99.99 | 66.68 | 33.34 |
| 110 | 6°36′ | 3°37.80′ | 54.99 | 0.58 | 109.96 | 2.32 | 109.98 | 73.35 | 36.68 |
| 120 | 7°12′ | 4°19.20′ | 59.99 | 0.75 | 119.93 | 3.01 | 119.97 | 80.02 | 40.02 |
| 130 | 7°48′ | 5°04.20′ | 64.98 | 0.96 | 129.90 | 3.83 | 129.95 | 86.70 | 43.37 |
| 140 | 8°24′ | 5°52.80′ | 69.98 | 1.20 | 139.85 | 4.79 | 139.93 | 93.38 | 46.71 |
| 150 | 9°00′ | 6°45.00′ | 74.97 | 1.47 | 149.79 | 5.88 | 149.91 | 100.07 | 50.07 |
| 160 | 9°36′ | 7°40.80′ | 79.95 | 1.79 | 159.71 | 7.14 | 159.87 | 106.77 | 53.42 |
| 170 | 10°12′ | 8°40.20′ | 84.94 | 2.14 | 169.61 | 8.56 | 169.83 | 113.47 | 56.79 |
| 180 | 10°48′ | 9°43.20′ | 89.91 | 2.54 | 179.48 | 10.16 | 179.77 | 120.18 | 60.16 |
| 190 | 11°24′ | 10°49.80′ | 94.89 | 2.99 | 189.32 | 11.94 | 189.70 | 126.90 | 63.55 |
| 200 | 12°00′ | 12°00.00′ | 99.85 | 3.49 | 199.12 | 13.92 | 199.61 | 133.64 | 66.95 |
| 210 | 12°36′ | 13°13.80′ | 104.81 | 4.03 | 208.88 | 16.10 | 209.50 | 140.39 | 70.36 |
| 220 | 13°12′ | 14°31.20′ | 109.76 | 4.64 | 218.59 | 18.50 | 219.37 | 147.16 | 73.78 |
| 230 | 13°48′ | 15°52.20′ | 114.71 | 5.29 | 228.24 | 21.12 | 229.22 | 153.95 | 77.23 |
| 240 | 14°24′ | 17°16.80′ | 119.64 | 6.01 | 237.83 | 23.97 | 239.03 | 160.77 | 80.70 |
| 250 | 15°00′ | 18°45.00′ | 124.56 | 6.79 | 247.34 | 27.06 | 248.81 | 167.61 | 84.19 |
| 260 | 15°36′ | 20°16.80′ | 129.46 | 7.63 | 256.76 | 30.40 | 258.56 | 174.48 | 87.71 |
| 270 | 16°12′ | 21°52.20′ | 134.35 | 8.54 | 266.09 | 34.00 | 268.26 | 181.39 | 91.27 |
| 280 | 16°48′ | 23°31.20′ | 139.22 | 9.52 | 275.32 | 37.85 | 277.91 | 188.34 | 94.86 |
| 290 | 17°24′ | 25°13.80′ | 144.07 | 10.57 | 284.43 | 41.98 | 287.51 | 195.33 | 98.49 |
| 300 | 18°00′ | 27°00.00′ | 148.90 | 11.69 | 293.41 | 46.38 | 297.05 | 202.38 | 102.16 |
| 310 | 18°36′ | 28°49.80′ | 153.70 | 12.88 | 302.24 | 51.06 | 306.53 | 209.48 | 105.89 |
| 320 | 19°12′ | 30°43.20′ | 158.48 | 14.15 | 310.92 | 56.03 | 315.93 | 216.64 | 109.68 |
| 330 | 19°48′ | 32°40.20′ | 163.23 | 15.50 | 319.43 | 61.28 | 325.26 | 223.87 | 113.52 |
| 340 | 20°24′ | 34°40.80′ | 167.94 | 16.93 | 327.75 | 66.82 | 334.50 | 231.17 | 117.44 |
| 350 | 21°00′ | 36°45.00′ | 172.63 | 18.44 | 335.87 | 72.66 | 343.64 | 238.57 | 121.44 |
| 360 | 21°36′ | 38°52.80′ | 177.27 | 20.03 | 343.77 | 78.79 | 352.69 | 246.06 | 125.52 |
| 370 | 22°12′ | 41°04.20′ | 181.88 | 21.70 | 351.44 | 85.21 | 361.62 | 253.65 | 129.71 |
| 380 | 22°48′ | 43°19.20′ | 186.44 | 23.46 | 358.84 | 91.93 | 370.43 | 261.36 | 133.99 |
| 390 | 23°24′ | 45°37.80′ | 190.95 | 25.30 | 365.98 | 98.93 | 379.12 | 269.20 | 138.40 |
| 400 | 24°00′ | 48°00.00′ | 195.41 | 27.24 | 372.82 | 106.22 | 387.66 | 277.18 | 142.94 |
| 410 | 24°36′ | 50°25.80′ | 199.82 | 29.25 | 379.36 | 113.80 | 396.06 | 285.32 | 147.62 |
| 420 | 25°12′ | 52°55.20′ | 204.17 | 31.36 | 385.56 | 121.64 | 404.29 | 293.63 | 152.47 |
| 430 | 25°48′ | 55°28.20′ | 208.46 | 33.55 | 391.41 | 129.75 | 412.35 | 302.13 | 157.49 |
| 440 | 26°24′ | 58°04.80′ | 212.68 | 35.83 | 396.89 | 138.11 | 420.23 | 310.85 | 162.72 |
| 450 | 27°00′ | 60°45.00′ | 216.83 | 38.20 | 401.98 | 146.72 | 427.92 | 319.81 | 168.16 |
| 460 | 27°36′ | 63°28.80′ | 220.90 | 40.66 | 406.65 | 155.56 | 435.39 | 329.03 | 173.85 |
| 470 | 28°12′ | 66°16.20′ | 224.90 | 43.20 | 410.90 | 164.61 | 442.65 | 338.54 | 179.81 |
| 480 | 28°48′ | 69°07.20′ | 228.82 | 45.82 | 414.70 | 173.86 | 449.67 | 348.37 | 186.03 |
| 490 | 29°24′ | 72°01.80′ | 232.65 | 48.53 | 418.02 | 183.29 | 456.44 | 358.57 | 192.69 |
| 500 | 30°00′ | 75°00.00′ | 236.38 | 51.32 | 420.86 | 192.88 | 462.95 | 369.18 | 199.68 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 6.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 30°36′ | 78°01.80′ | 240.02 | 54.19 | 423.19 | 202.60 | 469.19 | 380.24 | 207.10 |
| 520 | 31°12′ | 81°07.20′ | 243.56 | 57.14 | 425.00 | 212.43 | 475.14 | 391.81 | 215.01 |
| 530 | 31°48′ | 84°16.20′ | 247.00 | 60.17 | 426.27 | 222.35 | 480.78 | 403.96 | 223.47 |
| 540 | 32°24′ | 87°28.80′ | 250.33 | 63.26 | 426.99 | 232.32 | 486.11 | 416.77 | 232.55 |
| 550 | 33°00′ | 90°45.00′ | 253.54 | 66.43 | 427.15 | 242.32 | 491.10 | 430.32 | 242.34 |
| 560 | 33°36′ | 94°04.80′ | 256.64 | 69.66 | 426.73 | 252.31 | 495.74 | 444.73 | 252.95 |
| 570 | 34°12′ | 97°28.20′ | 259.61 | 72.95 | 425.72 | 262.26 | 500.02 | 460.11 | 264.50 |
| 580 | 34°48′ | 100°55.20′ | 262.47 | 76.30 | 424.13 | 272.13 | 503.92 | 476.63 | 277.15 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 6.5

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°39′ | 0°01.95′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°18′ | 0°07.80′ | 10.00 | 0.00 | 20.00 | 0.02 | 20.00 | 13.33 | 6.67 |
| 30 | 1°57′ | 0°17.55′ | 15.00 | 0.01 | 30.00 | 0.05 | 30.00 | 20.00 | 10.00 |
| 40 | 2°36′ | 0°31.20′ | 20.00 | 0.03 | 40.00 | 0.12 | 40.00 | 26.67 | 13.33 |
| 50 | 3°15′ | 0°48.75′ | 25.00 | 0.06 | 50.00 | 0.24 | 50.00 | 33.33 | 16.67 |
| 60 | 3°54′ | 1°10.20′ | 30.00 | 0.10 | 60.00 | 0.41 | 60.00 | 40.00 | 20.00 |
| 70 | 4°33′ | 1°35.55′ | 35.00 | 0.16 | 69.99 | 0.65 | 70.00 | 46.67 | 23.34 |
| 80 | 5°12′ | 2°04.80′ | 40.00 | 0.24 | 79.99 | 0.97 | 80.00 | 53.34 | 26.67 |
| 90 | 5°51′ | 2°37.95′ | 45.00 | 0.34 | 89.98 | 1.38 | 89.99 | 60.01 | 30.01 |
| 100 | 6°30′ | 3°15.00′ | 49.99 | 0.47 | 99.97 | 1.89 | 99.99 | 66.68 | 33.34 |
| 110 | 7°09′ | 3°55.95′ | 54.99 | 0.63 | 109.95 | 2.52 | 109.98 | 73.35 | 36.68 |
| 120 | 7°48′ | 4°40.80′ | 59.99 | 0.82 | 119.92 | 3.27 | 119.96 | 80.03 | 40.03 |
| 130 | 8°27′ | 5°29.55′ | 64.98 | 1.04 | 129.88 | 4.15 | 129.95 | 86.71 | 43.37 |
| 140 | 9°06′ | 6°22.20′ | 69.97 | 1.30 | 139.83 | 5.18 | 139.92 | 93.39 | 46.72 |
| 150 | 9°45′ | 7°18.75′ | 74.96 | 1.59 | 149.76 | 6.37 | 149.89 | 100.09 | 50.08 |
| 160 | 10°24′ | 8°19.20′ | 79.94 | 1.93 | 159.66 | 7.73 | 159.85 | 106.78 | 53.44 |
| 170 | 11°03′ | 9°23.55′ | 84.92 | 2.32 | 169.54 | 9.27 | 169.80 | 113.49 | 56.81 |
| 180 | 11°42′ | 10°31.80′ | 89.90 | 2.75 | 179.39 | 11.00 | 179.73 | 120.21 | 60.19 |
| 190 | 12°21′ | 11°43.95′ | 94.87 | 3.24 | 189.20 | 12.93 | 189.65 | 126.95 | 63.59 |
| 200 | 13°00′ | 13°00.00′ | 99.83 | 3.77 | 198.97 | 15.07 | 199.54 | 133.69 | 67.00 |
| 210 | 13°39′ | 14°19.95′ | 104.78 | 4.37 | 208.69 | 17.43 | 209.42 | 140.46 | 70.42 |
| 220 | 14°18′ | 15°43.80′ | 109.72 | 5.02 | 218.35 | 20.02 | 219.26 | 147.25 | 73.86 |
| 230 | 14°57′ | 17°11.55′ | 114.66 | 5.73 | 227.94 | 22.86 | 229.08 | 154.06 | 77.33 |
| 240 | 15°36′ | 18°43.20′ | 119.57 | 6.51 | 237.45 | 25.94 | 238.86 | 160.90 | 80.82 |
| 250 | 16°15′ | 20°18.75′ | 124.48 | 7.35 | 246.88 | 29.28 | 248.61 | 167.78 | 84.34 |
| 260 | 16°54′ | 21°58.20′ | 129.37 | 8.26 | 256.20 | 32.88 | 258.30 | 174.69 | 87.90 |
| 270 | 17°33′ | 23°41.55′ | 134.23 | 9.25 | 265.42 | 36.76 | 267.95 | 181.64 | 91.49 |
| 280 | 18°12′ | 25°28.80′ | 139.08 | 10.30 | 274.51 | 40.92 | 277.55 | 188.64 | 95.13 |
| 290 | 18°51′ | 27°19.95′ | 143.91 | 11.44 | 283.47 | 45.37 | 287.08 | 195.69 | 98.81 |
| 300 | 19°30′ | 29°15.00′ | 148.71 | 12.64 | 292.28 | 50.11 | 296.54 | 202.80 | 102.55 |
| 310 | 20°09′ | 31°13.95′ | 153.48 | 13.93 | 300.91 | 55.14 | 305.93 | 209.98 | 106.35 |
| 320 | 20°48′ | 33°16.80′ | 158.22 | 15.30 | 309.37 | 60.48 | 315.23 | 217.23 | 110.22 |
| 330 | 21°27′ | 35°23.55′ | 162.92 | 16.76 | 317.63 | 66.12 | 324.44 | 224.56 | 114.16 |
| 340 | 22°06′ | 37°34.20′ | 167.59 | 18.30 | 325.67 | 72.06 | 333.55 | 231.99 | 118.19 |
| 350 | 22°45′ | 39°48.75′ | 172.22 | 19.92 | 333.47 | 78.31 | 342.55 | 239.52 | 122.31 |
| 360 | 23°24′ | 42°07.20′ | 176.81 | 21.63 | 341.03 | 84.87 | 351.43 | 247.17 | 126.54 |
| 370 | 24°03′ | 44°29.55′ | 181.34 | 23.43 | 348.30 | 91.73 | 360.18 | 254.94 | 130.89 |
| 380 | 24°42′ | 46°55.80′ | 185.83 | 25.32 | 355.29 | 98.88 | 368.79 | 262.85 | 135.36 |
| 390 | 25°21′ | 49°25.95′ | 190.26 | 27.31 | 361.95 | 106.33 | 377.25 | 270.92 | 139.98 |
| 400 | 26°00′ | 52°00.00′ | 194.63 | 29.38 | 368.29 | 114.07 | 385.55 | 279.16 | 144.76 |
| 410 | 26°39′ | 54°37.95′ | 198.94 | 31.54 | 374.26 | 122.09 | 393.67 | 287.60 | 149.72 |
| 420 | 27°18′ | 57°19.80′ | 203.18 | 33.79 | 379.85 | 130.38 | 401.61 | 296.25 | 154.88 |
| 430 | 27°57′ | 60°05.55′ | 207.35 | 36.14 | 385.05 | 138.92 | 409.34 | 305.14 | 160.27 |
| 440 | 28°36′ | 62°55.20′ | 211.45 | 38.58 | 389.82 | 147.71 | 416.87 | 314.30 | 165.90 |
| 450 | 29°15′ | 65°48.75′ | 215.46 | 41.10 | 394.15 | 156.73 | 424.16 | 323.75 | 171.91 |
| 460 | 29°54′ | 68°46.20′ | 219.39 | 43.71 | 398.01 | 165.95 | 431.22 | 333.54 | 178.03 |
| 470 | 30°33′ | 71°47.55′ | 223.22 | 46.41 | 401.38 | 175.36 | 438.02 | 343.70 | 184.60 |
| 480 | 31°12′ | 74°52.80′ | 226.97 | 49.20 | 404.25 | 184.94 | 444.54 | 354.28 | 191.57 |
| 490 | 31°51′ | 78°01.95′ | 230.61 | 52.07 | 406.59 | 194.66 | 450.79 | 365.33 | 198.98 |
| 500 | 32°30′ | 81°15.00′ | 234.15 | 55.02 | 408.39 | 204.50 | 456.73 | 376.92 | 206.90 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

## a = 6.5—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 33°09′ | 84°31.95′ | 237.58 | 58.05 | 409.63 | 214.42 | 462.35 | 389.11 | 215.40 |
| 520 | 33°48′ | 87°52.80′ | 240.89 | 61.15 | 410.29 | 224.39 | 467.64 | 401.98 | 224.55 |
| 530 | 34°27′ | 91°17.55′ | 244.09 | 64.32 | 410.36 | 234.39 | 472.59 | 415.65 | 234.45 |
| 540 | 35°06′ | 94°46.20′ | 247.17 | 67.57 | 409.84 | 244.38 | 477.16 | 430.23 | 245.23 |
| 550 | 35°45′ | 98°18.75′ | 250.11 | 70.87 | 408.70 | 254.31 | 481.36 | 445.86 | 257.01 |
| 560 | 36°24′ | 101°55.20′ | 252.93 | 74.24 | 406.94 | 264.15 | 485.16 | 462.71 | 269.97 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 7.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°42′ | 0°02.10′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°24′ | 0°08.40′ | 10.00 | 0.00 | 20.00 | 0.02 | 20.00 | 13.33 | 6.67 |
| 30 | 2°06′ | 0°18.90′ | 15.00 | 0.01 | 30.00 | 0.05 | 30.00 | 20.00 | 10.00 |
| 40 | 2°48′ | 0°33.60′ | 20.00 | 0.03 | 40.00 | 0.13 | 40.00 | 26.67 | 13.33 |
| 50 | 3°30′ | 0°52.50′ | 25.00 | 0.06 | 50.00 | 0.25 | 50.00 | 33.33 | 16.67 |
| 60 | 4°12′ | 1°15.60′ | 30.00 | 0.11 | 60.00 | 0.44 | 60.00 | 40.00 | 20.00 |
| 70 | 4°54′ | 1°42.90′ | 35.00 | 0.17 | 69.99 | 0.70 | 70.00 | 46.67 | 23.34 |
| 80 | 5°36′ | 2°14.40′ | 40.00 | 0.26 | 79.99 | 1.04 | 79.99 | 53.34 | 26.67 |
| 90 | 6°18′ | 2°50.10′ | 45.00 | 0.37 | 89.98 | 1.48 | 89.99 | 60.01 | 30.01 |
| 100 | 7°00′ | 3°30.00′ | 49.99 | 0.51 | 99.96 | 2.04 | 99.98 | 66.68 | 33.35 |
| 110 | 7°42′ | 4°14.10′ | 54.99 | 0.68 | 109.94 | 2.71 | 109.97 | 73.35 | 36.69 |
| 120 | 8°24′ | 5°02.40′ | 59.98 | 0.88 | 119.91 | 3.52 | 119.96 | 80.03 | 40.03 |
| 130 | 9°06′ | 5°54.90′ | 64.98 | 1.12 | 129.86 | 4.47 | 129.94 | 86.72 | 43.38 |
| 140 | 9°48′ | 6°51.60′ | 69.97 | 1.40 | 139.80 | 5.58 | 139.91 | 93.40 | 46.73 |
| 150 | 10°30′ | 7°52.50′ | 74.95 | 1.72 | 149.72 | 6.86 | 149.87 | 100.10 | 50.09 |
| 160 | 11°12′ | 8°57.60′ | 79.93 | 2.08 | 159.61 | 8.33 | 159.83 | 106.80 | 53.46 |
| 170 | 11°54′ | 10°06.90′ | 84.91 | 2.50 | 169.47 | 9.98 | 169.76 | 113.52 | 56.84 |
| 180 | 12°36′ | 11°20.40′ | 89.88 | 2.96 | 179.30 | 11.84 | 179.69 | 120.25 | 60.22 |
| 190 | 13°18′ | 12°38.10′ | 94.85 | 3.49 | 189.08 | 13.92 | 189.59 | 126.99 | 63.63 |
| 200 | 14°00′ | 14°00.00′ | 99.80 | 4.06 | 198.81 | 16.22 | 199.47 | 133.75 | 67.05 |
| 210 | 14°42′ | 15°26.10′ | 104.75 | 4.70 | 208.48 | 18.76 | 209.32 | 140.54 | 70.49 |
| 220 | 15°24′ | 16°56.40′ | 109.68 | 5.40 | 218.08 | 21.55 | 219.15 | 147.34 | 73.95 |
| 230 | 16°06′ | 18°30.90′ | 114.60 | 6.17 | 227.61 | 24.59 | 228.93 | 154.18 | 77.44 |
| 240 | 16°48′ | 20°09.60′ | 119.51 | 7.01 | 237.05 | 27.90 | 238.68 | 161.05 | 80.96 |
| 250 | 17°30′ | 21°52.50′ | 124.40 | 7.91 | 246.38 | 31.49 | 248.38 | 167.96 | 84.51 |
| 260 | 18°12′ | 23°39.60′ | 129.26 | 8.89 | 255.60 | 35.35 | 258.03 | 174.91 | 88.10 |
| 270 | 18°54′ | 25°30.90′ | 134.11 | 9.95 | 264.69 | 39.51 | 267.63 | 181.91 | 91.74 |
| 280 | 19°36′ | 27°26.40′ | 138.94 | 11.08 | 273.65 | 43.97 | 277.16 | 188.96 | 95.42 |
| 290 | 20°18′ | 29°26.10′ | 143.73 | 12.30 | 282.44 | 48.73 | 286.61 | 196.08 | 99.16 |
| 300 | 21°00′ | 31°30.00′ | 148.50 | 13.60 | 291.06 | 53.80 | 295.99 | 203.26 | 102.97 |
| 310 | 21°42′ | 33°38.10′ | 153.24 | 14.98 | 299.49 | 59.18 | 305.28 | 210.52 | 106.85 |
| 320 | 22°24′ | 35°50.40′ | 157.94 | 16.45 | 307.70 | 64.88 | 314.47 | 217.88 | 110.81 |
| 330 | 23°06′ | 38°06.90′ | 162.60 | 18.01 | 315.69 | 70.89 | 323.56 | 225.33 | 114.86 |
| 340 | 23°48′ | 40°27.60′ | 167.21 | 19.66 | 323.43 | 77.23 | 332.52 | 232.88 | 119.01 |
| 350 | 24°30′ | 42°52.50′ | 171.78 | 21.39 | 330.90 | 83.87 | 341.37 | 240.57 | 123.27 |
| 360 | 25°12′ | 45°21.60′ | 176.30 | 23.23 | 338.08 | 90.83 | 350.07 | 248.38 | 127.66 |
| 370 | 25°54′ | 47°54.90′ | 180.77 | 25.15 | 344.95 | 98.10 | 358.63 | 256.35 | 132.19 |
| 380 | 26°36′ | 50°32.40′ | 185.18 | 27.17 | 351.48 | 105.67 | 367.02 | 264.49 | 136.87 |
| 390 | 27°18′ | 53°14.10′ | 189.52 | 29.28 | 357.65 | 113.54 | 375.24 | 272.82 | 141.73 |
| 400 | 28°00′ | 56°00.00′ | 193.80 | 31.49 | 363.44 | 121.69 | 383.27 | 281.36 | 146.79 |
| 410 | 28°42′ | 58°50.10′ | 198.00 | 33.79 | 368.83 | 130.12 | 391.11 | 290.13 | 152.06 |
| 420 | 29°24′ | 61°44.40′ | 202.13 | 36.19 | 373.78 | 138.80 | 398.72 | 299.17 | 157.58 |
| 430 | 30°06′ | 64°42.90′ | 206.17 | 38.68 | 378.29 | 147.73 | 406.11 | 308.51 | 163.38 |
| 440 | 30°48′ | 67°45.60′ | 210.13 | 41.26 | 382.32 | 156.88 | 413.25 | 318.17 | 169.49 |
| 450 | 31°30′ | 70°52.50′ | 214.00 | 43.93 | 385.85 | 166.23 | 420.14 | 328.21 | 175.94 |
| 460 | 32°12′ | 74°03.60′ | 217.77 | 46.70 | 388.86 | 175.77 | 426.74 | 338.66 | 182.79 |
| 470 | 32°54′ | 77°18.90′ | 221.44 | 49.54 | 391.34 | 185.45 | 433.06 | 349.59 | 190.09 |
| 480 | 33°36′ | 80°38.40′ | 225.00 | 52.48 | 393.25 | 195.27 | 439.06 | 361.06 | 197.90 |
| 490 | 34°18′ | 84°02.10′ | 228.45 | 55.49 | 394.58 | 205.18 | 444.74 | 373.15 | 206.29 |
| 500 | 35°00′ | 87°30.00′ | 231.78 | 58.59 | 395.32 | 215.15 | 450.08 | 385.93 | 215.35 |

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a = 7.0—Continued

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 510 | 35°42′ | 91°02.10′ | 234.99 | 61.75 | 395.45 | 225.15 | 455.05 | 399.52 | 225.18 |
| 520 | 36°24′ | 94°38.40′ | 238.07 | 64.99 | 394.96 | 235.13 | 459.65 | 414.04 | 235.90 |
| 530 | 37°06′ | 98°18.90′ | 241.02 | 68.30 | 393.83 | 245.07 | 463.85 | 429.65 | 247.67 |
| 540 | 37°48′ | 102°03.60′ | 243.83 | 71.66 | 392.06 | 254.91 | 467.64 | 446.52 | 260.66 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 8.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°48′ | 0°02.40′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°36′ | 0°09.60′ | 10.00 | 0.00 | 20.00 | 0.02 | 20.00 | 13.33 | 6.67 |
| 30 | 2°24′ | 0°21.60′ | 15.00 | 0.02 | 30.00 | 0.06 | 30.00 | 20.00 | 10.00 |
| 40 | 3°12′ | 0°38.40′ | 20.00 | 0.04 | 40.00 | 0.15 | 40.00 | 26.67 | 13.33 |
| 50 | 4°00′ | 1°00.00′ | 25.00 | 0.07 | 50.00 | 0.29 | 50.00 | 33.33 | 16.67 |
| 60 | 4°48′ | 1°26.40′ | 30.00 | 0.13 | 60.00 | 0.50 | 60.00 | 40.00 | 20.00 |
| 70 | 5°36′ | 1°57.60′ | 35.00 | 0.20 | 69.99 | 0.80 | 70.00 | 46.67 | 23.34 |
| 80 | 6°24′ | 2°33.60′ | 40.00 | 0.30 | 79.98 | 1.19 | 79.99 | 53.34 | 26.67 |
| 90 | 7°12′ | 3°14.40′ | 45.00 | 0.42 | 89.97 | 1.70 | 89.99 | 60.01 | 30.01 |
| 100 | 8°00′ | 4°00.00′ | 49.99 | 0.58 | 99.95 | 2.33 | 99.98 | 66.68 | 33.35 |
| 110 | 8°48′ | 4°50.40′ | 54.99 | 0.77 | 109.92 | 3.10 | 109.97 | 73.36 | 36.69 |
| 120 | 9°36′ | 5°45.60′ | 59.98 | 1.00 | 119.88 | 4.02 | 119.95 | 80.04 | 40.04 |
| 130 | 10°24′ | 6°45.60′ | 64.97 | 1.28 | 129.82 | 5.11 | 129.92 | 86.73 | 43.39 |
| 140 | 11°12′ | 7°50.40′ | 69.96 | 1.60 | 139.74 | 6.38 | 139.88 | 93.43 | 46.75 |
| 150 | 12°00′ | 9°00.00′ | 74.94 | 1.96 | 149.63 | 7.84 | 149.84 | 100.13 | 50.12 |
| 160 | 12°48′ | 10°14.40′ | 79.91 | 2.38 | 159.49 | 9.51 | 159.77 | 106.85 | 53.50 |
| 170 | 13°36′ | 11°33.60′ | 84.88 | 2.85 | 169.31 | 11.40 | 169.69 | 113.58 | 56.89 |
| 180 | 14°24′ | 12°57.60′ | 89.85 | 3.39 | 179.08 | 13.52 | 179.59 | 120.32 | 60.29 |
| 190 | 15°12′ | 14°26.40′ | 94.80 | 3.98 | 188.80 | 15.89 | 189.46 | 127.09 | 63.72 |
| 200 | 16°00′ | 16°00.00′ | 99.74 | 4.64 | 198.45 | 18.51 | 199.31 | 133.88 | 67.17 |
| 210 | 16°48′ | 17°38.40′ | 104.67 | 5.37 | 208.02 | 21.41 | 209.12 | 140.70 | 70.64 |
| 220 | 17°36′ | 19°21.60′ | 109.58 | 6.17 | 217.50 | 24.58 | 218.89 | 147.55 | 74.14 |
| 230 | 18°24′ | 21°09.60′ | 114.48 | 7.04 | 226.88 | 28.04 | 228.61 | 154.44 | 77.68 |
| 240 | 19°12′ | 23°02.40′ | 119.36 | 8.00 | 236.15 | 31.80 | 238.28 | 161.38 | 81.25 |
| 250 | 20°00′ | 25°00.00′ | 124.21 | 9.03 | 245.28 | 35.87 | 247.89 | 168.36 | 84.87 |
| 260 | 20°48′ | 27°02.40′ | 129.04 | 10.14 | 254.27 | 40.26 | 257.44 | 175.40 | 88.55 |
| 270 | 21°36′ | 29°09.60′ | 133.84 | 11.35 | 263.09 | 44.96 | 266.90 | 182.50 | 92.28 |
| 280 | 22°24′ | 31°21.60′ | 138.61 | 12.64 | 271.73 | 50.00 | 276.29 | 189.68 | 96.08 |
| 290 | 23°12′ | 33°38.40′ | 143.35 | 14.02 | 280.16 | 55.37 | 285.58 | 196.94 | 99.96 |
| 300 | 24°00′ | 36°00.00′ | 148.05 | 15.49 | 288.37 | 61.08 | 294.77 | 204.30 | 103.92 |
| 310 | 24°48′ | 38°26.40′ | 152.70 | 17.06 | 296.33 | 67.13 | 303.84 | 211.76 | 107.98 |
| 320 | 25°36′ | 40°57.60′ | 157.31 | 18.72 | 304.03 | 73.52 | 312.79 | 219.34 | 112.15 |
| 330 | 26°24′ | 43°33.60′ | 161.87 | 20.48 | 311.43 | 80.24 | 321.60 | 227.05 | 116.44 |
| 340 | 27°12′ | 46°14.40′ | 166.38 | 22.34 | 318.51 | 87.30 | 330.26 | 234.92 | 120.87 |
| 350 | 28°00′ | 49°00.00′ | 170.82 | 24.30 | 325.25 | 94.68 | 338.75 | 242.95 | 125.45 |
| 360 | 28°48′ | 51°50.40′ | 175.20 | 26.36 | 331.63 | 102.39 | 347.07 | 251.17 | 130.22 |
| 370 | 29°36′ | 54°45.60′ | 179.51 | 28.53 | 337.60 | 110.40 | 355.20 | 259.61 | 135.18 |
| 380 | 30°24′ | 57°45.60′ | 183.74 | 30.79 | 343.16 | 118.72 | 363.11 | 268.28 | 140.36 |
| 390 | 31°12′ | 60°50.40′ | 187.90 | 33.15 | 348.26 | 127.31 | 370.80 | 277.23 | 145.79 |
| 400 | 32°00′ | 64°00.00′ | 191.96 | 35.62 | 352.89 | 136.18 | 378.26 | 286.47 | 151.51 |
| 410 | 32°48′ | 67°14.40′ | 195.94 | 38.18 | 357.02 | 145.28 | 385.45 | 296.07 | 157.55 |
| 420 | 33°36′ | 70°33.60′ | 199.82 | 40.84 | 360.62 | 154.61 | 392.37 | 306.05 | 163.96 |
| 430 | 34°24′ | 73°57.60′ | 203.60 | 43.60 | 363.67 | 164.13 | 398.99 | 316.48 | 170.78 |
| 440 | 35°12′ | 77°26.40′ | 207.26 | 46.45 | 366.14 | 173.82 | 405.31 | 327.41 | 178.08 |
| 450 | 36°00′ | 81°00.00′ | 210.82 | 49.39 | 368.01 | 183.64 | 411.29 | 338.92 | 185.93 |
| 460 | 36°48′ | 84°38.40′ | 214.25 | 52.41 | 369.26 | 193.56 | 416.92 | 351.10 | 194.41 |
| 470 | 37°36′ | 88°21.60′ | 217.55 | 55.52 | 369.87 | 203.54 | 422.18 | 364.05 | 203.63 |
| 480 | 38°24′ | 92°09.60′ | 220.73 | 58.71 | 369.83 | 213.54 | 427.05 | 377.88 | 213.69 |
| 490 | 39°12′ | 96°02.40′ | 223.76 | 61.97 | 369.12 | 223.51 | 431.51 | 392.77 | 224.76 |
| 500 | 40°00′ | 100°00.00′ | 226.66 | 65.30 | 367.72 | 233.41 | 435.55 | 408.88 | 237.02 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 9.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 0°54′ | 0°02.70′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 1°48′ | 0°10.80′ | 10.00 | 0.01 | 20.00 | 0.02 | 20.00 | 13.33 | 6.67 |
| 30 | 2°42′ | 0°24.30′ | 15.00 | 0.02 | 30.00 | 0.07 | 30.00 | 20.00 | 10.00 |
| 40 | 3°36′ | 0°43.20′ | 20.00 | 0.04 | 40.00 | 0.17 | 40.00 | 26.67 | 13.33 |
| 50 | 4°30′ | 1°07.50′ | 25.00 | 0.08 | 50.00 | 0.33 | 50.00 | 33.33 | 16.67 |
| 60 | 5°24′ | 1°37.20′ | 30.00 | 0.14 | 60.00 | 0.57 | 60.00 | 40.00 | 20.00 |
| 70 | 6°18′ | 2°12.30′ | 35.00 | 0.22 | 69.99 | 0.90 | 70.00 | 46.67 | 23.34 |
| 80 | 7°12′ | 2°52.80′ | 40.00 | 0.34 | 79.98 | 1.34 | 79.99 | 53.34 | 26.67 |
| 90 | 8°06′ | 3°38.70′ | 44.99 | 0.48 | 89.96 | 1.91 | 89.98 | 60.01 | 30.01 |
| 100 | 9°00′ | 4°30.00′ | 49.99 | 0.65 | 99.94 | 2.62 | 99.97 | 66.69 | 33.35 |
| 110 | 9°54′ | 5°26.70′ | 54.98 | 0.87 | 109.90 | 3.48 | 109.96 | 73.37 | 36.70 |
| 120 | 10°48′ | 6°28.80′ | 59.97 | 1.13 | 119.85 | 4.52 | 119.93 | 80.05 | 40.05 |
| 130 | 11°42′ | 7°36.30′ | 64.96 | 1.44 | 129.77 | 5.74 | 129.90 | 86.75 | 43.41 |
| 140 | 12°36′ | 8°49.20′ | 69.94 | 1.79 | 139.67 | 7.17 | 139.85 | 93.45 | 46.77 |
| 150 | 13°30′ | 10°07.50′ | 74.92 | 2.21 | 149.53 | 8.82 | 149.79 | 100.16 | 50.15 |
| 160 | 14°24′ | 11°31.20′ | 79.89 | 2.68 | 159.35 | 10.69 | 159.71 | 106.89 | 53.54 |
| 170 | 15°18′ | 13°00.30′ | 84.85 | 3.21 | 169.13 | 12.81 | 169.61 | 113.64 | 56.95 |
| 180 | 16°12′ | 14°34.80′ | 89.81 | 3.81 | 178.84 | 15.20 | 179.48 | 120.41 | 60.37 |
| 190 | 17°06′ | 16°14.70′ | 94.75 | 4.48 | 188.48 | 17.85 | 189.32 | 127.20 | 63.82 |
| 200 | 18°00′ | 18°00.00′ | 99.67 | 5.22 | 198.04 | 20.80 | 199.12 | 134.03 | 67.30 |
| 210 | 18°54′ | 19°50.70′ | 104.58 | 6.04 | 207.49 | 24.04 | 208.88 | 140.89 | 70.81 |
| 220 | 19°48′ | 21°46.80′ | 109.47 | 6.93 | 216.84 | 27.59 | 218.59 | 147.79 | 74.36 |
| 230 | 20°42′ | 23°48.30′ | 114.34 | 7.91 | 226.06 | 31.46 | 228.24 | 154.74 | 77.95 |
| 240 | 21°36′ | 25°55.20′ | 119.19 | 8.98 | 235.13 | 35.67 | 237.82 | 161.75 | 81.59 |
| 250 | 22°30′ | 28°07.50′ | 124.00 | 10.14 | 244.04 | 40.21 | 247.33 | 168.82 | 85.29 |
| 260 | 23°24′ | 30°25.20′ | 128.79 | 11.39 | 252.77 | 45.10 | 256.76 | 175.96 | 89.06 |
| 270 | 24°18′ | 32°48.30′ | 133.54 | 12.73 | 261.28 | 50.34 | 266.09 | 183.19 | 92.91 |
| 280 | 25°12′ | 35°16.80′ | 138.25 | 14.17 | 269.57 | 55.93 | 275.31 | 190.51 | 96.84 |
| 290 | 26°06′ | 37°50.70′ | 142.92 | 15.72 | 277.60 | 61.89 | 284.42 | 197.94 | 100.87 |
| 300 | 27°00′ | 40°30.00′ | 147.54 | 17.36 | 285.35 | 68.20 | 293.39 | 205.50 | 105.02 |
| 310 | 27°54′ | 43°14.70′ | 152.10 | 19.11 | 292.80 | 74.88 | 302.22 | 213.19 | 109.29 |
| 320 | 28°48′ | 46°04.80′ | 156.61 | 20.96 | 299.91 | 81.90 | 310.90 | 221.04 | 113.71 |
| 330 | 29°42′ | 49°00.30′ | 161.06 | 22.92 | 306.66 | 89.28 | 319.40 | 229.07 | 118.29 |
| 340 | 30°36′ | 52°01.20′ | 165.43 | 24.98 | 313.02 | 97.00 | 327.71 | 237.30 | 123.06 |
| 350 | 31°30′ | 55°07.50′ | 169.74 | 27.15 | 318.96 | 105.04 | 335.81 | 245.75 | 128.03 |
| 360 | 32°24′ | 58°19.20′ | 173.96 | 29.43 | 324.45 | 113.40 | 343.69 | 254.47 | 133.25 |
| 370 | 33°18′ | 61°36.30′ | 178.10 | 31.82 | 329.45 | 122.05 | 351.34 | 263.47 | 138.75 |
| 380 | 34°12′ | 64°58.80′ | 182.14 | 34.31 | 333.95 | 130.98 | 358.72 | 272.81 | 144.55 |
| 390 | 35°06′ | 68°26.70′ | 186.08 | 36.90 | 337.90 | 140.17 | 365.82 | 282.53 | 150.71 |
| 400 | 36°00′ | 72°00.00′ | 189.92 | 39.60 | 341.29 | 149.58 | 372.63 | 292.69 | 157.27 |
| 410 | 36°54′ | 75°38.70′ | 193.65 | 42.40 | 344.07 | 159.18 | 379.11 | 303.34 | 164.31 |
| 420 | 37°48′ | 79°22.80′ | 197.26 | 45.30 | 346.24 | 168.94 | 385.25 | 314.56 | 171.88 |
| 430 | 38°42′ | 83°12.30′ | 200.74 | 48.29 | 347.75 | 178.82 | 391.04 | 326.45 | 180.09 |
| 440 | 39°36′ | 87°07.20′ | 204.09 | 51.37 | 348.60 | 188.78 | 396.43 | 339.10 | 189.02 |
| 450 | 40°30′ | 91°07.50′ | 207.31 | 54.53 | 348.75 | 198.78 | 401.42 | 352.66 | 198.82 |
| 460 | 41°24′ | 95°13.20′ | 210.38 | 57.78 | 348.20 | 208.76 | 405.99 | 367.27 | 209.63 |
| 470 | 42°18′ | 99°24.30′ | 213.30 | 61.10 | 346.93 | 218.68 | 410.10 | 383.15 | 221.66 |
| 480 | 43°12′ | 103°40.80′ | 216.06 | 64.48 | 344.93 | 228.48 | 413.74 | 400.54 | 235.15 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 10.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 1°00′ | 0°03.00′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 2°00′ | 0°12.00′ | 10.00 | 0.01 | 20.00 | 0.02 | 20.00 | 13.33 | 6.67 |
| 30 | 3°00′ | 0°27.00′ | 15.00 | 0.02 | 30.00 | 0.08 | 30.00 | 20.00 | 10.00 |
| 40 | 4°00′ | 0°48.00′ | 20.00 | 0.05 | 40.00 | 0.19 | 40.00 | 26.67 | 13.33 |
| 50 | 5°00′ | 1°15.00′ | 25.00 | 0.09 | 50.00 | 0.36 | 50.00 | 33.33 | 16.67 |
| 60 | 6°00′ | 1°48.00′ | 30.00 | 0.16 | 59.99 | 0.63 | 60.00 | 40.00 | 20.00 |
| 70 | 7°00′ | 2°27.00′ | 35.00 | 0.25 | 69.99 | 1.00 | 69.99 | 46.67 | 23.34 |
| 80 | 8°00′ | 3°12.00′ | 40.00 | 0.37 | 79.98 | 1.49 | 79.99 | 53.34 | 26.67 |
| 90 | 9°00′ | 4°03.00′ | 44.99 | 0.53 | 89.96 | 2.12 | 89.98 | 60.02 | 30.01 |
| 100 | 10°00′ | 5°00.00′ | 49.99 | 0.73 | 99.92 | 2.91 | 99.97 | 66.69 | 33.36 |
| 110 | 11°00′ | 6°03.00′ | 54.98 | 0.97 | 109.88 | 3.87 | 109.95 | 73.38 | 36.71 |
| 120 | 12°00′ | 7°12.00′ | 59.97 | 1.26 | 119.81 | 5.02 | 119.92 | 80.07 | 40.06 |
| 130 | 13°00′ | 8°27.00′ | 64.95 | 1.60 | 129.72 | 6.38 | 129.87 | 86.77 | 43.42 |
| 140 | 14°00′ | 9°48.00′ | 69.93 | 1.99 | 139.59 | 7.97 | 139.82 | 93.48 | 46.80 |
| 150 | 15°00′ | 11°15.00′ | 74.90 | 2.45 | 149.42 | 9.79 | 149.74 | 100.20 | 50.18 |
| 160 | 16°00′ | 12°48.00′ | 79.87 | 2.97 | 159.20 | 11.87 | 159.65 | 106.95 | 53.59 |
| 170 | 17°00′ | 14°27.00′ | 84.82 | 3.56 | 168.92 | 14.23 | 169.52 | 113.71 | 57.01 |
| 180 | 18°00′ | 16°12.00′ | 89.76 | 4.23 | 178.57 | 16.87 | 179.36 | 120.51 | 60.46 |
| 190 | 19°00′ | 18°03.00′ | 94.69 | 4.97 | 188.12 | 19.81 | 189.16 | 127.33 | 63.94 |
| 200 | 20°00′ | 20°00.00′ | 99.60 | 5.79 | 197.58 | 23.07 | 198.92 | 134.19 | 67.45 |
| 210 | 21°00′ | 22°03.00′ | 104.48 | 6.70 | 206.91 | 26.66 | 208.62 | 141.10 | 71.00 |
| 220 | 22°00′ | 24°12.00′ | 109.35 | 7.69 | 216.11 | 30.58 | 218.26 | 148.06 | 74.60 |
| 230 | 23°00′ | 26°27.00′ | 114.19 | 8.78 | 225.15 | 34.86 | 227.83 | 155.08 | 78.26 |
| 240 | 24°00′ | 28°48.00′ | 119.00 | 9.96 | 234.01 | 39.49 | 237.32 | 162.17 | 81.98 |
| 250 | 25°00′ | 31°15.00′ | 123.77 | 11.24 | 242.66 | 44.49 | 246.71 | 169.34 | 85.77 |
| 260 | 26°00′ | 33°48.00′ | 128.51 | 12.62 | 251.10 | 49.87 | 256.00 | 176.60 | 89.65 |
| 270 | 27°00′ | 36°27.00′ | 133.20 | 14.11 | 259.28 | 55.62 | 265.17 | 183.97 | 93.62 |
| 280 | 28°00′ | 39°12.00′ | 137.84 | 15.70 | 267.17 | 61.75 | 274.22 | 191.46 | 97.70 |
| 290 | 29°00′ | 42°03.00′ | 142.44 | 17.40 | 274.76 | 68.26 | 283.12 | 199.09 | 101.92 |
| 300 | 30°00′ | 45°00.00′ | 146.97 | 19.21 | 282.02 | 75.15 | 291.86 | 206.87 | 106.27 |
| 310 | 31°00′ | 48°03.00′ | 151.44 | 21.13 | 288.90 | 82.40 | 300.42 | 214.83 | 110.79 |
| 320 | 32°00′ | 51°12.00′ | 155.83 | 23.16 | 295.37 | 90.02 | 308.79 | 223.00 | 115.51 |
| 330 | 33°00′ | 54°27.00′ | 160.16 | 25.31 | 301.42 | 97.98 | 316.94 | 231.40 | 120.43 |
| 340 | 34°00′ | 57°48.00′ | 164.39 | 27.57 | 306.99 | 106.28 | 324.87 | 240.06 | 125.60 |
| 350 | 35°00′ | 61°15.00′ | 168.54 | 29.94 | 312.06 | 114.90 | 332.54 | 249.03 | 131.06 |
| 360 | 36°00′ | 64°48.00′ | 172.59 | 32.42 | 316.60 | 123.81 | 339.95 | 258.34 | 136.83 |
| 370 | 37°00′ | 68°27.00′ | 176.54 | 35.01 | 320.57 | 132.99 | 347.06 | 268.05 | 142.98 |
| 380 | 38°00′ | 72°12.00′ | 180.38 | 37.72 | 323.94 | 142.40 | 353.85 | 278.22 | 149.56 |
| 390 | 39°00′ | 76°03.00′ | 184.09 | 40.52 | 326.67 | 152.02 | 360.31 | 288.91 | 156.64 |
| 400 | 40°00′ | 80°00.00′ | 187.68 | 43.43 | 328.75 | 161.80 | 366.41 | 300.22 | 164.29 |
| 410 | 41°00′ | 84°03.00′ | 191.14 | 46.44 | 330.14 | 171.70 | 372.12 | 312.24 | 172.63 |
| 420 | 42°00′ | 88°12.00′ | 194.46 | 49.54 | 330.81 | 181.67 | 377.42 | 325.10 | 181.76 |
| 430 | 43°00′ | 92°27.00′ | 197.63 | 52.73 | 330.76 | 191.67 | 382.28 | 338.96 | 191.85 |
| 440 | 44°00′ | 96°48.00′ | 200.65 | 56.00 | 329.95 | 201.64 | 386.69 | 354.00 | 203.07 |
| 450 | 45°00′ | 101°15.00′ | 203.51 | 59.35 | 328.39 | 211.51 | 390.61 | 370.46 | 215.65 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

$a = 12.5$

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 1°15′ | 0°03.75′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 2°30′ | 0°15.00′ | 10.00 | 0.01 | 20.00 | 0.03 | 20.00 | 13.33 | 6.67 |
| 30 | 3°45′ | 0°33.75′ | 15.00 | 0.02 | 30.00 | 0.10 | 30.00 | 20.00 | 10.00 |
| 40 | 5°00′ | 1°00.00′ | 20.00 | 0.06 | 40.00 | 0.23 | 40.00 | 26.67 | 13.33 |
| 50 | 6°15′ | 1°33.75′ | 25.00 | 0.11 | 50.00 | 0.45 | 50.00 | 33.33 | 16.67 |
| 60 | 7°30′ | 2°15.00′ | 30.00 | 0.20 | 59.99 | 0.79 | 60.00 | 40.00 | 20.00 |
| 70 | 8°45′ | 3°03.75′ | 35.00 | 0.31 | 69.98 | 1.25 | 69.99 | 46.67 | 23.34 |
| 80 | 10°00′ | 4°00.00′ | 39.99 | 0.47 | 79.96 | 1.86 | 79.98 | 53.35 | 26.68 |
| 90 | 11°15′ | 5°03.75′ | 44.99 | 0.66 | 89.93 | 2.65 | 89.97 | 60.02 | 30.02 |
| 100 | 12°30′ | 6°15.00′ | 49.98 | 0.91 | 99.88 | 3.63 | 99.95 | 66.71 | 33.37 |
| 110 | 13°45′ | 7°33.75′ | 54.97 | 1.21 | 109.81 | 4.83 | 109.91 | 73.40 | 36.73 |
| 120 | 15°00′ | 9°00.00′ | 59.95 | 1.57 | 119.70 | 6.27 | 119.87 | 80.10 | 40.09 |
| 130 | 16°15′ | 10°33.75′ | 64.93 | 1.99 | 129.56 | 7.97 | 129.80 | 86.82 | 43.47 |
| 140 | 17°30′ | 12°15.00′ | 69.89 | 2.49 | 139.36 | 9.94 | 139.72 | 93.56 | 46.87 |
| 150 | 18°45′ | 14°03.75′ | 74.85 | 3.06 | 149.10 | 12.22 | 149.60 | 100.32 | 50.29 |
| 160 | 20°00′ | 16°00.00′ | 79.79 | 3.71 | 158.76 | 14.81 | 159.45 | 107.11 | 53.73 |
| 170 | 21°15′ | 18°03.75′ | 84.72 | 4.45 | 168.32 | 17.74 | 169.25 | 113.93 | 57.21 |
| 180 | 22°30′ | 20°15.00′ | 89.63 | 5.28 | 177.76 | 21.02 | 179.00 | 120.79 | 60.72 |
| 190 | 23°45′ | 22°33.75′ | 94.51 | 6.20 | 187.07 | 24.67 | 188.69 | 127.71 | 64.28 |
| 200 | 25°00′ | 25°00.00′ | 99.37 | 7.22 | 196.23 | 28.70 | 198.31 | 134.69 | 67.90 |
| 210 | 26°15′ | 27°33.75′ | 104.20 | 8.35 | 205.19 | 33.12 | 207.85 | 141.74 | 71.58 |
| 220 | 27°30′ | 30°15.00′ | 108.99 | 9.58 | 213.95 | 37.95 | 217.29 | 148.87 | 75.34 |
| 230 | 28°45′ | 33°03.75′ | 113.74 | 10.93 | 222.46 | 43.20 | 226.61 | 156.10 | 79.18 |
| 240 | 30°00′ | 36°00.00′ | 118.44 | 12.39 | 230.70 | 48.87 | 235.82 | 163.44 | 83.14 |
| 250 | 31°15′ | 39°03.75′ | 123.09 | 13.97 | 238.63 | 54.96 | 244.87 | 170.91 | 87.21 |
| 260 | 32°30′ | 42°15.00′ | 127.68 | 15.67 | 246.21 | 61.47 | 253.77 | 178.54 | 91.42 |
| 270 | 33°45′ | 45°33.75′ | 132.20 | 17.49 | 253.42 | 68.40 | 262.49 | 186.35 | 95.80 |
| 280 | 35°00′ | 49°00.00′ | 36.66 | 19.44 | 260.20 | 75.75 | 271.00 | 194.36 | 100.36 |
| 290 | 36°15′ | 52°33.75′ | 141.03 | 21.52 | 266.53 | 83.49 | 279.30 | 202.61 | 105.15 |
| 300 | 37°30′ | 56°15.00′ | 145.31 | 23.72 | 272.35 | 91.62 | 287.34 | 211.13 | 110.19 |
| 310 | 38°45′ | 60°03.75′ | 149.49 | 26.04 | 277.62 | 100.11 | 295.12 | 219.97 | 115.53 |
| 320 | 40°00′ | 64°00.00′ | 153.57 | 28.49 | 282.31 | 108.94 | 302.60 | 229.18 | 121.21 |
| 330 | 41°15′ | 68°03.75′ | 157.54 | 31.07 | 286.38 | 118.08 | 309.76 | 238.82 | 127.29 |
| 340 | 42°30′ | 72°15.00′ | 161.38 | 33.77 | 289.77 | 127.48 | 316.57 | 248.97 | 133.85 |
| 350 | 43°45′ | 76°33.75′ | 165.09 | 36.58 | 292.46 | 137.11 | 323.01 | 259.70 | 140.97 |
| 360 | 45°00′ | 81°00.00′ | 168.65 | 39.51 | 294.41 | 146.92 | 329.03 | 271.14 | 148.75 |
| 370 | 46°15′ | 85°33.75′ | 172.07 | 42.55 | 295.58 | 156.84 | 334.62 | 283.41 | 157.32 |
| 380 | 47°30′ | 90°15.00′ | 175.33 | 45.69 | 295.95 | 166.83 | 339.73 | 296.68 | 166.84 |
| 390 | 48°45′ | 95°03.75′ | 178.41 | 48.92 | 295.49 | 176.82 | 344.35 | 311.15 | 177.51 |
| 400 | 50°00′ | 100°00.00′ | 181.33 | 52.24 | 294.18 | 186.73 | 348.44 | 327.10 | 189.61 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 15.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 1°30′ | 0°04.50′ | 5.00 | 0.00 | 10.00 | 0.00 | 10.00 | 6.67 | 3.33 |
| 20 | 3°00′ | 0°18.00′ | 10.00 | 0.01 | 20.00 | 0.03 | 20.00 | 13.33 | 6.67 |
| 30 | 4°30′ | 0°40.50′ | 15.00 | 0.03 | 30.00 | 0.12 | 30.00 | 20.00 | 10.00 |
| 40 | 6°00′ | 1°12.00′ | 20.00 | 0.07 | 40.00 | 0.28 | 40.00 | 26.67 | 13.33 |
| 50 | 7°30′ | 1°52.50′ | 25.00 | 0.14 | 49.99 | 0.55 | 50.00 | 33.34 | 16.67 |
| 60 | 9°00′ | 2°42.00′ | 30.00 | 0.24 | 59.99 | 0.94 | 59.99 | 40.00 | 20.00 |
| 70 | 10°30′ | 3°40.50′ | 35.00 | 0.37 | 69.97 | 1.50 | 69.99 | 46.68 | 23.34 |
| 80 | 12°00′ | 4°48.00′ | 39.99 | 0.56 | 79.94 | 2.23 | 79.98 | 53.35 | 26.68 |
| 90 | 13°30′ | 6°04.50′ | 44.98 | 0.79 | 89.90 | 3.18 | 89.96 | 60.04 | 30.03 |
| 100 | 15°00′ | 7°30.00′ | 49.97 | 1.09 | 99.83 | 4.36 | 99.92 | 66.73 | 33.39 |
| 110 | 16°30′ | 9°04.50′ | 54.95 | 1.45 | 109.72 | 5.80 | 109.88 | 73.43 | 36.75 |
| 120 | 18°00′ | 10°48.00′ | 59.93 | 1.88 | 119.57 | 7.52 | 119.81 | 80.15 | 40.14 |
| 130 | 19°30′ | 12°40.50′ | 64.89 | 2.39 | 129.37 | 9.55 | 129.72 | 86.89 | 43.54 |
| 140 | 21°00′ | 14°42.00′ | 69.85 | 2.99 | 139.08 | 11.92 | 139.59 | 93.66 | 46.96 |
| 150 | 22°30′ | 16°52.50′ | 74.78 | 3.67 | 148.70 | 14.64 | 149.42 | 100.46 | 50.42 |
| 160 | 24°00′ | 19°12.00′ | 79.70 | 4.45 | 158.21 | 17.73 | 159.20 | 107.30 | 53.91 |
| 170 | 25°30′ | 21°40.50′ | 84.60 | 5.33 | 167.58 | 21.22 | 168.92 | 114.19 | 57.45 |
| 180 | 27°00′ | 24°18.00′ | 89.46 | 6.32 | 176.79 | 25.12 | 178.57 | 121.15 | 61.05 |
| 190 | 28°30′ | 27°04.50′ | 94.30 | 7.42 | 185.80 | 29.45 | 188.12 | 128.18 | 64.71 |
| 200 | 30°00′ | 30°00.00′ | 99.09 | 8.64 | 194.59 | 34.23 | 197.57 | 135.30 | 68.46 |
| 210 | 31°30′ | 33°04.50′ | 103.84 | 9.98 | 203.11 | 39.46 | 206.91 | 142.52 | 72.30 |
| 220 | 33°00′ | 36°18.00′ | 108.54 | 11.45 | 211.33 | 45.15 | 216.10 | 149.87 | 76.26 |
| 230 | 34°30′ | 39°40.50′ | 113.19 | 13.05 | 219.21 | 51.30 | 225.14 | 157.37 | 80.35 |
| 240 | 36°00′ | 43°12.00′ | 117.76 | 14.78 | 226.71 | 57.91 | 233.99 | 165.04 | 84.60 |
| 250 | 37°30′ | 46°52.50′ | 122.26 | 16.64 | 233.78 | 64.99 | 242.64 | 172.91 | 89.04 |
| 260 | 39°00′ | 50°42.00′ | 126.68 | 18.65 | 240.37 | 72.51 | 251.06 | 181.02 | 93.70 |
| 270 | 40°30′ | 54°40.50′ | 131.00 | 20.79 | 246.43 | 80.46 | 259.23 | 189.41 | 98.61 |
| 280 | 42°00′ | 58°48.00′ | 135.23 | 23.07 | 251.91 | 88.82 | 267.11 | 198.13 | 103.83 |
| 290 | 43°30′ | 63°04.50′ | 139.34 | 25.48 | 256.77 | 97.55 | 274.68 | 207.23 | 109.41 |
| 300 | 45°00′ | 67°30.00′ | 143.32 | 28.03 | 260.95 | 106.63 | 281.90 | 216.78 | 115.42 |
| 310 | 46°30′ | 72°04.50′ | 147.17 | 30.72 | 264.41 | 116.01 | 288.74 | 226.88 | 121.93 |
| 320 | 48°00′ | 76°48.00′ | 150.88 | 33.54 | 267.09 | 125.64 | 295.17 | 237.62 | 129.05 |
| 330 | 49°30′ | 81°40.50′ | 154.43 | 36.48 | 268.96 | 135.47 | 301.15 | 249.14 | 136.91 |
| 340 | 51°00′ | 86°42.00′ | 157.82 | 39.53 | 269.98 | 145.41 | 306.65 | 261.59 | 145.65 |
| 350 | 52°30′ | 91°52.50′ | 161.03 | 42.70 | 270.10 | 155.41 | 311.62 | 275.19 | 155.49 |
| 360 | 54°00′ | 97°12.00′ | 164.05 | 45.97 | 269.32 | 165.37 | 316.04 | 290.21 | 166.69 |
| 370 | 55°30′ | 102°40.50′ | 166.87 | 49.33 | 267.59 | 175.22 | 319.86 | 307.00 | 179.60 |

# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 20.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 2°00′ | 0°06.00′ | 5.00 | 0.00 | 10.00 | 0.01 | 10.00 | 6.67 | 3.33 |
| 20 | 4°00′ | 0°24.00′ | 10.00 | 0.01 | 20.00 | 0.05 | 20.00 | 13.33 | 6.67 |
| 30 | 6°00′ | 0°54.00′ | 15.00 | 0.04 | 30.00 | 0.16 | 30.00 | 20.00 | 10.00 |
| 40 | 8°00′ | 1°36.00′ | 20.00 | 0.09 | 40.00 | 0.37 | 40.00 | 26.67 | 13.33 |
| 50 | 10°00′ | 2°30.00′ | 25.00 | 0.18 | 49.99 | 0.73 | 50.00 | 33.34 | 16.67 |
| 60 | 12°00′ | 3°36.00′ | 30.00 | 0.31 | 59.98 | 1.26 | 59.99 | 40.01 | 20.01 |
| 70 | 14°00′ | 4°54.00′ | 34.99 | 0.50 | 69.95 | 1.99 | 69.98 | 46.68 | 23.35 |
| 80 | 16°00′ | 6°24.00′ | 39.98 | 0.74 | 79.90 | 2.98 | 79.96 | 53.37 | 26.70 |
| 90 | 18°00′ | 8°06.00′ | 44.97 | 1.06 | 89.82 | 4.24 | 89.92 | 60.06 | 30.06 |
| 100 | 20°00′ | 10°00.00′ | 49.95 | 1.45 | 99.70 | 5.81 | 99.86 | 66.77 | 33.43 |
| 110 | 22°00′ | 12°06.00′ | 54.92 | 1.93 | 109.51 | 7.72 | 109.78 | 73.51 | 36.82 |
| 120 | 24°00′ | 14°24.00′ | 59.87 | 2.51 | 119.24 | 10.01 | 119.66 | 80.27 | 40.24 |
| 130 | 26°00′ | 16°54.00′ | 64.81 | 3.19 | 128.87 | 12.70 | 129.50 | 87.06 | 43.70 |
| 140 | 28°00′ | 19°36.00′ | 69.73 | 3.97 | 138.37 | 15.83 | 139.27 | 93.91 | 47.19 |
| 150 | 30°00′ | 22°30.00′ | 74.62 | 4.88 | 147.70 | 19.42 | 148.97 | 100.82 | 50.75 |
| 160 | 32°00′ | 25°36.00′ | 79.47 | 5.92 | 156.84 | 23.49 | 158.58 | 107.80 | 54.37 |
| 170 | 34°00′ | 28°54.00′ | 84.28 | 7.08 | 165.73 | 28.07 | 168.09 | 114.88 | 58.08 |
| 180 | 36°00′ | 32°24.00′ | 89.05 | 8.39 | 174.33 | 33.16 | 177.45 | 122.07 | 61.89 |
| 190 | 38°00′ | 36°06.00′ | 93.76 | 9.84 | 182.59 | 38.79 | 186.67 | 129.40 | 65.83 |
| 200 | 40°00′ | 40°00.00′ | 98.40 | 11.44 | 190.47 | 44.95 | 195.70 | 136.90 | 69.92 |
| 210 | 42°00′ | 44°06.00′ | 102.96 | 13.19 | 197.90 | 51.64 | 204.52 | 144.61 | 74.21 |
| 220 | 44°00′ | 48°24.00′ | 107.43 | 15.10 | 204.81 | 58.86 | 213.10 | 152.55 | 78.71 |
| 230 | 46°00′ | 52°54.00′ | 111.81 | 17.17 | 211.15 | 66.59 | 221.40 | 160.79 | 83.49 |
| 240 | 48°00′ | 57°36.00′ | 116.07 | 19.40 | 216.85 | 74.80 | 229.39 | 169.38 | 88.59 |
| 250 | 50°00′ | 62°30.00′ | 120.20 | 21.78 | 221.85 | 83.46 | 237.03 | 178.40 | 94.09 |
| 260 | 52°00′ | 67°36.00′ | 124.20 | 24.33 | 226.07 | 92.53 | 244.27 | 187.93 | 100.08 |
| 270 | 54°00′ | 72°54.00′ | 128.03 | 27.03 | 229.45 | 101.93 | 251.07 | 198.09 | 106.65 |
| 280 | 56°00′ | 78°24.00′ | 131.70 | 29.88 | 231.93 | 111.62 | 257.39 | 209.02 | 113.94 |
| 290 | 58°00′ | 84°06.00′ | 135.19 | 32.86 | 233.45 | 121.50 | 263.17 | 220.90 | 122.14 |
| 300 | 60°00′ | 90°00.00′ | 138.48 | 35.98 | 233.97 | 131.48 | 268.38 | 233.97 | 131.48 |
| 310 | 62°00′ | 96°06.00′ | 141.55 | 39.23 | 233.44 | 141.46 | 272.96 | 248.56 | 142.26 |
| 320 | 64°00′ | 102°24.00′ | 144.40 | 42.58 | 231.84 | 151.32 | 276.85 | 265.11 | 154.94 |

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# TABLE V, THE STANDARD HIGHWAY SPIRAL

a = 25.0

| L | D | S | q | p | X | Y | C | U | V |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 2°30′ | 0°07.50′ | 5.00 | 0.00 | 10.00 | 0.01 | 10.00 | 6.67 | 3.33 |
| 20 | 5°00′ | 0°30.00′ | 10.00 | 0.01 | 20.00 | 0.06 | 20.00 | 13.33 | 6.67 |
| 30 | 7°30′ | 1°07.50′ | 15.00 | 0.05 | 30.00 | 0.20 | 30.00 | 20.00 | 10.00 |
| 40 | 10°00′ | 2°00.00′ | 20.00 | 0.12 | 40.00 | 0.47 | 40.00 | 26.67 | 13.33 |
| 50 | 12°30′ | 3°07.50′ | 25.00 | 0.23 | 49.99 | 0.91 | 49.99 | 33.34 | 16.67 |
| 60 | 15°00′ | 4°30.00′ | 29.99 | 0.39 | 59.96 | 1.57 | 59.98 | 40.01 | 20.01 |
| 70 | 17°30′ | 6°07.50′ | 34.99 | 0.62 | 69.92 | 2.49 | 69.96 | 46.69 | 23.36 |
| 80 | 20°00′ | 8°00.00′ | 39.97 | 0.93 | 79.84 | 3.72 | 79.93 | 53.39 | 26.72 |
| 90 | 22°30′ | 10°07.50′ | 44.95 | 1.32 | 89.72 | 5.29 | 89.88 | 60.10 | 30.09 |
| 100 | 25°00′ | 12°30.00′ | 49.92 | 1.81 | 99.53 | 7.25 | 99.79 | 66.83 | 33.49 |
| 110 | 27°30′ | 15°07.50′ | 54.87 | 2.41 | 109.24 | 9.63 | 109.66 | 73.60 | 36.91 |
| 120 | 30°00′ | 18°00.00′ | 59.80 | 3.13 | 118.82 | 12.48 | 119.47 | 80.42 | 40.38 |
| 130 | 32°30′ | 21°07.50′ | 64.71 | 3.97 | 128.24 | 15.82 | 129.22 | 87.29 | 43.90 |
| 140 | 35°00′ | 24°30.00′ | 59.58 | 4.96 | 137.46 | 19.70 | 138.87 | 94.24 | 47.49 |
| 150 | 37°30′ | 28°07.50′ | 74.40 | 6.08 | 146.43 | 24.12 | 148.40 | 101.29 | 51.18 |
| 160 | 40°00′ | 32°00.00′ | 79.18 | 7.36 | 155.08 | 29.13 | 157.79 | 108.46 | 54.97 |
| 170 | 42°30′ | 36°07.50′ | 83.89 | 8.81 | 163.37 | 34.73 | 167.02 | 115.79 | 58.90 |
| 180 | 45°00′ | 40°30.00′ | 88.52 | 10.42 | 171.21 | 40.92 | 176.03 | 123.30 | 63.01 |
| 190 | 47°30′ | 45°07.50′ | 93.07 | 12.20 | 178.55 | 47.71 | 184.81 | 131.04 | 67.33 |
| 200 | 50°00′ | 50°00.00′ | 97.51 | 14.16 | 185.30 | 55.09 | 193.31 | 139.07 | 71.91 |
| 210 | 52°30′ | 55°07.50′ | 101.84 | 16.29 | 191.38 | 63.02 | 201.49 | 147.45 | 76.82 |
| 220 | 55°00′ | 60°30.00′ | 106.04 | 18.61 | 196.70 | 71.48 | 209.29 | 156.26 | 82.13 |
| 230 | 57°30′ | 66°07.50′ | 110.08 | 21.10 | 201.20 | 80.41 | 216.67 | 165.61 | 87.94 |
| 240 | 60°00′ | 72°00.00′ | 113.95 | 23.76 | 204.77 | 89.75 | 223.58 | 175.61 | 94.36 |
| 250 | 62°30′ | 78°07.50′ | 117.64 | 26.59 | 207.35 | 99.40 | 229.95 | 186.45 | 101.58 |
| 260 | 65°00′ | 84°30.00′ | 121.12 | 29.58 | 208.87 | 109.28 | 235.73 | 198.34 | 109.79 |
| 270 | 67°30′ | 91°07.50′ | 124.38 | 32.72 | 209.25 | 119.27 | 240.85 | 211.59 | 119.29 |
| 280 | 70°00′ | 98°00.00′ | 127.41 | 35.99 | 208.46 | 129.23 | 245.27 | 226.62 | 130.50 |
| 290 | 72°30′ | 105°07.50′ | 130.17 | 39.37 | 206.46 | 139.02 | 248.90 | 244.04 | 144.01 |