



| Angle<br>in<br>Degrees | Angle<br>in<br>Radians | Sine  | Cosine | Tangent | Angle<br>in<br>Degrees | Angle<br>in<br>Radians | Sine  | Cosine | Tangent |
|------------------------|------------------------|-------|--------|---------|------------------------|------------------------|-------|--------|---------|
| 0°                     | 0.000                  | 0.000 | 1.000  | 0.000   |                        |                        |       |        |         |
| 1°                     | 0.017                  | 0.017 | 1.000  | 0.017   | 46°                    | 0.803                  | 0.719 | 0.695  | 1.036   |
| 2°                     | 0.035                  | 0.035 | 0.999  | 0.035   | 47°                    | 0.820                  | 0.731 | 0.682  | 1.072   |
| 3°                     | 0.052                  | 0.052 | 0.999  | 0.052   | 48°                    | 0.838                  | 0.743 | 0.669  | 1.111   |
| 4°                     | 0.070                  | 0.070 | 0.998  | 0.070   | 49°                    | 0.855                  | 0.755 | 0.656  | 1.150   |
| 5°                     | 0.087                  | 0.087 | 0.996  | 0.087   | 50°                    | 0.873                  | 0.766 | 0.643  | 1.192   |
| 6°                     | 0.105                  | 0.105 | 0.995  | 0.105   | 51°                    | 0.890                  | 0.777 | 0.629  | 1.235   |
| 7°                     | 0.122                  | 0.122 | 0.993  | 0.123   | 52°                    | 0.908                  | 0.788 | 0.616  | 1.280   |
| 8°                     | 0.140                  | 0.139 | 0.990  | 0.141   | 53°                    | 0.925                  | 0.799 | 0.602  | 1.327   |
| 9°                     | 0.157                  | 0.156 | 0.988  | 0.158   | 54°                    | 0.942                  | 0.809 | 0.588  | 1.376   |
| 10°                    | 0.175                  | 0.174 | 0.985  | 0.176   | 55°                    | 0.960                  | 0.819 | 0.574  | 1.428   |
| 11°                    | 0.192                  | 0.191 | 0.982  | 0.194   | 56°                    | 0.977                  | 0.829 | 0.559  | 1.483   |
| 12°                    | 0.209                  | 0.208 | 0.978  | 0.213   | 57°                    | 0.995                  | 0.839 | 0.545  | 1.540   |
| 13°                    | 0.227                  | 0.225 | 0.974  | 0.231   | 58°                    | 1.012                  | 0.848 | 0.530  | 1.600   |
| 14°                    | 0.244                  | 0.242 | 0.970  | 0.249   | 59°                    | 1.030                  | 0.857 | 0.515  | 1.664   |
| 15°                    | 0.262                  | 0.259 | 0.966  | 0.268   | 60°                    | 1.047                  | 0.866 | 0.500  | 1.732   |
| 16°                    | 0.279                  | 0.276 | 0.961  | 0.287   | 61°                    | 1.065                  | 0.875 | 0.485  | 1.804   |
| 17°                    | 0.297                  | 0.292 | 0.956  | 0.306   | 62°                    | 1.082                  | 0.883 | 0.469  | 1.881   |
| 18°                    | 0.314                  | 0.309 | 0.951  | 0.325   | 63°                    | 1.100                  | 0.891 | 0.454  | 1.963   |
| 19°                    | 0.332                  | 0.326 | 0.946  | 0.344   | 64°                    | 1.117                  | 0.899 | 0.438  | 2.050   |
| 20°                    | 0.349                  | 0.342 | 0.940  | 0.364   | 65°                    | 1.134                  | 0.906 | 0.423  | 2.145   |
| 21°                    | 0.367                  | 0.358 | 0.934  | 0.384   | 66°                    | 1.152                  | 0.914 | 0.407  | 2.246   |
| 22°                    | 0.384                  | 0.375 | 0.927  | 0.404   | 67°                    | 1.169                  | 0.921 | 0.391  | 2.356   |
| 23°                    | 0.401                  | 0.391 | 0.921  | 0.424   | 68°                    | 1.187                  | 0.927 | 0.375  | 2.475   |
| 24°                    | 0.419                  | 0.407 | 0.914  | 0.445   | 69°                    | 1.204                  | 0.934 | 0.358  | 2.605   |
| 25°                    | 0.436                  | 0.423 | 0.906  | 0.466   | 70°                    | 1.222                  | 0.940 | 0.342  | 2.747   |
| 26°                    | 0.454                  | 0.438 | 0.899  | 0.488   | 71°                    | 1.239                  | 0.946 | 0.326  | 2.904   |
| 27°                    | 0.471                  | 0.454 | 0.891  | 0.510   | 72°                    | 1.257                  | 0.951 | 0.309  | 3.078   |
| 28°                    | 0.489                  | 0.469 | 0.883  | 0.532   | 73°                    | 1.274                  | 0.956 | 0.292  | 3.271   |
| 29°                    | 0.506                  | 0.485 | 0.875  | 0.554   | 74°                    | 1.292                  | 0.961 | 0.276  | 3.487   |
| 30°                    | 0.524                  | 0.500 | 0.866  | 0.577   | 75°                    | 1.309                  | 0.966 | 0.259  | 3.732   |
| 31°                    | 0.541                  | 0.515 | 0.857  | 0.601   | 76°                    | 1.326                  | 0.970 | 0.242  | 4.011   |
| 32°                    | 0.559                  | 0.530 | 0.848  | 0.625   | 77°                    | 1.344                  | 0.974 | 0.225  | 4.331   |
| 33°                    | 0.576                  | 0.545 | 0.839  | 0.649   | 78°                    | 1.361                  | 0.978 | 0.208  | 4.705   |
| 34°                    | 0.593                  | 0.559 | 0.829  | 0.675   | 79°                    | 1.379                  | 0.982 | 0.191  | 5.145   |
| 35°                    | 0.611                  | 0.574 | 0.819  | 0.700   | 80°                    | 1.396                  | 0.985 | 0.174  | 5.671   |
| 36°                    | 0.628                  | 0.588 | 0.809  | 0.727   | 81°                    | 1.414                  | 0.988 | 0.156  | 6.314   |
| 37°                    | 0.646                  | 0.602 | 0.799  | 0.754   | 82°                    | 1.431                  | 0.990 | 0.139  | 7.115   |
| 38°                    | 0.663                  | 0.616 | 0.788  | 0.781   | 83°                    | 1.449                  | 0.993 | 0.122  | 8.144   |
| 39°                    | 0.681                  | 0.629 | 0.777  | 0.810   | 84°                    | 1.466                  | 0.995 | 0.105  | 9.514   |
| 40°                    | 0.698                  | 0.643 | 0.766  | 0.839   | 85°                    | 1.484                  | 0.996 | 0.087  | 11.43   |
| 41°                    | 0.716                  | 0.656 | 0.755  | 0.869   | 86°                    | 1.501                  | 0.998 | 0.070  | 14.301  |
| 42°                    | 0.733                  | 0.669 | 0.743  | 0.900   | 87°                    | 1.518                  | 0.999 | 0.052  | 19.081  |
| 43°                    | 0.750                  | 0.682 | 0.731  | 0.933   | 88°                    | 1.536                  | 0.999 | 0.035  | 28.636  |
| 44°                    | 0.768                  | 0.695 | 0.719  | 0.966   | 89°                    | 1.553                  | 1.000 | 0.017  | 57.290  |
| 45°                    | 0.785                  | 0.707 | 0.707  | 1.000   | 90°                    | 1.571                  | 1.000 | 0.000  | ∞       |