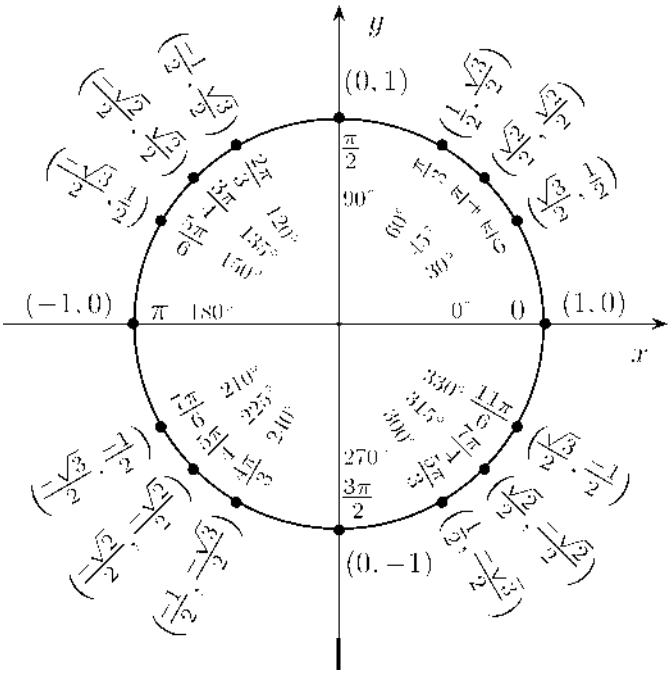
Stuff you need to know from Precalculus

Unit Circle



Trig Identities

$$\sec x = \frac{1}{\cos x} \qquad \csc x = \frac{1}{\sin x} \qquad \cot x = \frac{1}{\tan x}$$

$$\tan x = \frac{\sin x}{\cos x} \qquad \cot x = \frac{\cos x}{\sin x}$$

$$\cos^2 x + \sin^2 x = 1$$

$$1 + \tan^2 x = \sec^2 x$$

$$1 + \cot^2 x = \csc^2 x$$

$$\sin(2x) = 2\sin x \cos x$$

$$\cos(2x) = \cos^2 x - \sin^2 x$$

$$\cos^2 x = \frac{1}{2}(1 + \cos 2x)$$

$$\sin^2 x = \frac{1}{2}(1 - \cos 2x)$$

Equations of lines

Slope-Intercept form $y = mx + b$

Point-Slope form $y - y_1 = m(x - x_1)$

Normal line is perpendicular to tangent line

Radicals

If $x^2 = a$, then $x = \pm\sqrt{a}$

Even and Odd Functions

If $f(-x) = f(x)$, then f is an even function

If $f(-x) = -f(x)$, then f is an odd functions

Exponents

$$a^0 = 1,\ a \neq 0$$

$$a^1 = a$$

$$a^m \cdot a^n = a^{m+n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$\left(a^m\right)^n = a^{mn}$$

$$a^{-m} = \frac{1}{a^m},\ a \neq 0$$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m$$

Logarithms

$$\ln 1 = 0$$

$$\ln e = 1$$

$$\ln mn = \ln m + \ln n$$

$$\ln \frac{m}{n} = \ln m - \ln n$$

$$\ln m^n = n \ln m$$

$$e^{\ln x} = x = \ln e^x$$

$$\log_b x = \frac{\ln x}{\ln a}$$

Conversion formula:

$$\log_b x = y$$

$$\Leftrightarrow$$

$$b^y = x$$

Geometric Formulas

Triangle $A = \frac{1}{2}bh$

Equilateral Triangle $A = \frac{\sqrt{3}}{4}s^2$

Circle $A = \pi r^2,\ C = 2\pi r$

Sphere $V = \frac{4}{3}\pi r^3,\ SA = 4\pi r^2$

Cylinder $V = \pi r^2 h$

Cone $V = \frac{\pi}{3}r^2 h$