

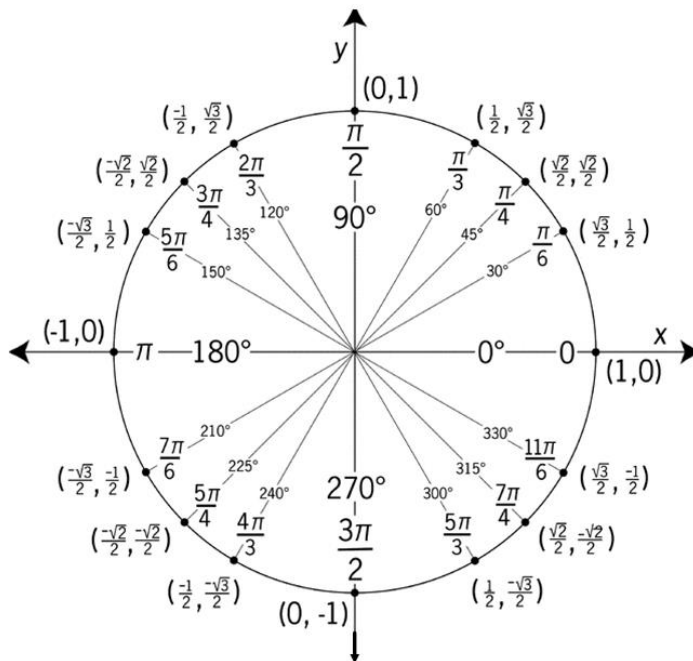
PRE-CALCULUS 120A FORMULA SHEET

TRANSFORMATIONS

$$(x, y) \rightarrow \left(\frac{1}{b}x + h, ay + k \right)$$

$$g(x) = af(b(x-h)) + k$$

UNIT CIRCLE



TRIGONOMETRIC IDENTITIES

Reciprocal Identities

$$\cos A = \frac{1}{\sec A} \quad \sec A = \frac{1}{\cos A} \quad \sin A = \frac{1}{\csc A} \quad \csc A = \frac{1}{\sin A} \quad \tan A = \frac{1}{\cot A} \quad \cot A = \frac{1}{\tan A}$$

Quotient Identities

$$\tan A = \frac{\sin A}{\cos A} \quad \cot A = \frac{\cos A}{\sin A}$$

Pythagorean Identities

$$\sin^2 A + \cos^2 A = 1 \quad 1 + \cot^2 A = \csc^2 A \quad \tan^2 A + 1 = \sec^2 A$$

Compound Angle Identities (Sum and Difference)

$$\cos(A + B) = \cos A \cos B - \sin A \sin B \quad \cos(A - B) = \cos A \cos B + \sin A \sin B$$

$$\sin(A + B) = \sin A \cos B + \cos A \sin B \quad \sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B} \quad \tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

Double Angle Identities

$$\begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ \sin 2A &= 2 \sin A \cos A \end{aligned} \quad \begin{aligned} &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned} \quad \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$