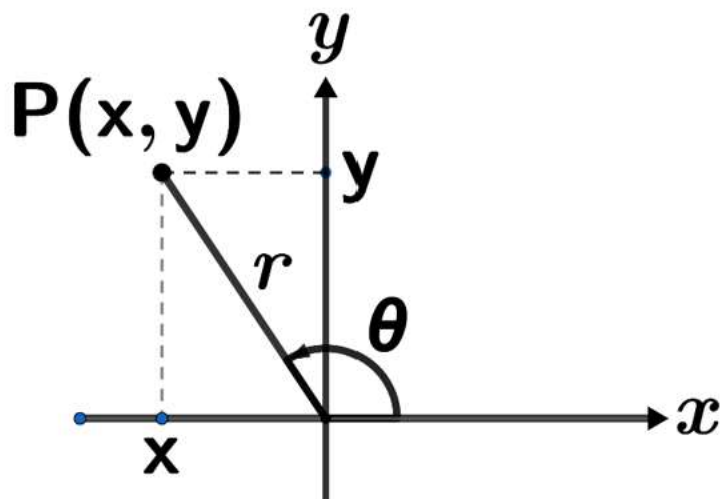


Trigonometric Functions of Any Angle

Let θ be an any angle in the standard position and let $P(x, y)$ any point.



$$x^2 + y^2 = r^2$$

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

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

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

$$\theta = \tan^{-1} \left(\frac{y}{x} \right)$$

$$P(x, y) = (r \cos \theta, r \sin \theta)$$

$$\sin \theta = \frac{y}{r}$$

$$\cos \theta = \frac{x}{r}$$

$$\tan \theta = \frac{y}{x} \quad (x \neq 0)$$

$$\csc \theta = \frac{r}{y} \quad (y \neq 0)$$

$$\sec \theta = \frac{r}{x} \quad (x \neq 0)$$

$$\cot \theta = \frac{x}{y} \quad (y \neq 0)$$