# 5.4 - Trigonometry for Any Angle

Skills:

- Evaluate trigonometric functions

# A New Way…

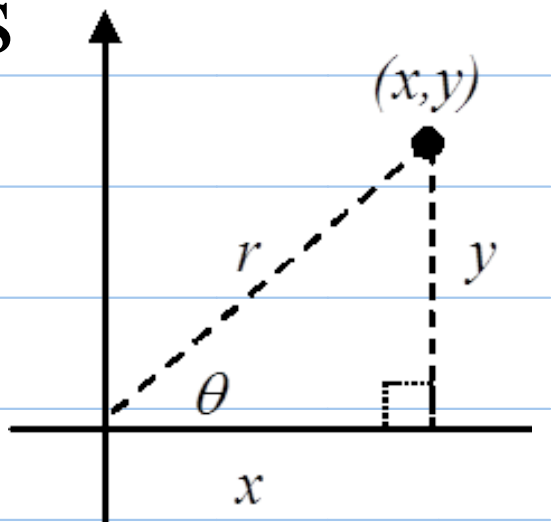
Let's extend the point idea from the Unit Circle out to *any point* in the plane...this will allow us to evaluate the functions for a more interesting set of angles!

# New (Technical) Definitions

$$\sin\theta = \frac{y}{r} \qquad \sec\theta = \frac{r}{x}$$

$$\cos\theta = \frac{x}{r} \qquad \csc\theta = \frac{r}{y}$$

$$\tan\theta = \frac{y}{x} \qquad \cot\theta = \frac{x}{y}$$



# Quick Definition

**Reference Angle**: the acute angle formed by the terminal side and the *x*-axis

This is how you turn any point into a triangle…*not that you need to*

# Example (-2, 7)

# Example

$$\cot(\theta) = -\frac{4}{3}; \sec(\theta) > 0$$

# Example

$$\sec(\theta) = -2; \tan(\theta) > 0$$