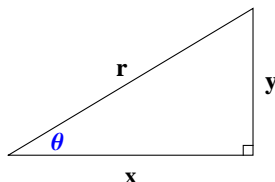


Right Triangle Trigonometry: Basic Definitions (and Some Drill Exercises)

The "inputs" for each of the six trigonometric functions are best thought of as **angles**. In the "Right Triangle Approach" to trigonometry, this angle input is taken to be one of the two acute angles in the triangle, say θ with $0^\circ < \theta < 90^\circ$. By convention, unless circumstances suggest otherwise, we'll take θ to be the angle at the lower left of the right triangle in standard position.



Defintions: Let $0^\circ < \theta < 90^\circ$ be an acute angle in a right triangle. Label the side opposite θ by y , label the side adjacent to θ by x , and label the hypotenuse by r . Then, for input θ , we define the output values for the six trig functions by the following ratios of side lengths:

$$\sin(\theta) = \frac{y}{r} \left(= \frac{\text{opp}}{\text{hyp}} \right) \qquad \cos(\theta) = \frac{x}{r} \left(= \frac{\text{adj}}{\text{hyp}} \right) \qquad \tan(\theta) = \frac{y}{x} \left(= \frac{\text{opp}}{\text{adj}} \right)$$

$$\csc(\theta) = \frac{r}{y} \left(= \frac{\text{hyp}}{\text{opp}} \right) \qquad \sec(\theta) = \frac{r}{x} \left(= \frac{\text{hyp}}{\text{adj}} \right) \qquad \cot(\theta) = \frac{x}{y} \left(= \frac{\text{adj}}{\text{opp}} \right)$$

Exercises For each triangle below:

- 1) Find the missing side length (using the Pythagorean Theorem)
 - 2) Find the each of six trig function values for the labelled angle in the triangle.
- (Note: Express your answers in *simplest radical form*!!)

