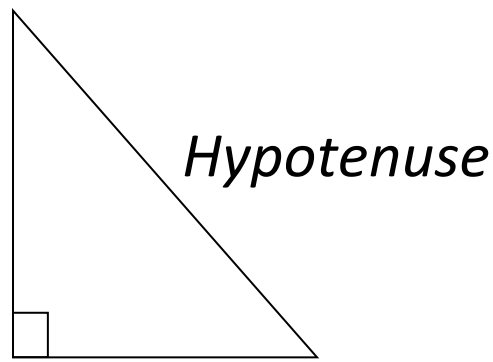
A triangle is a right triangle if one of its angles is a right angle.



Opposite Side

Adjacent Side

θ

$$\sin\theta = \frac{opp}{hyp} \qquad \cos\theta = \frac{adj}{hyp} \qquad \tan\theta = \frac{opp}{adj}$$

The next three are the reciprocal of the first three.

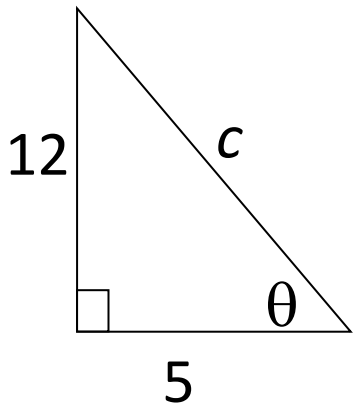
$$\csc\theta = \frac{1}{\sin\theta} \qquad \sec\theta = \frac{1}{\cos\theta} \qquad \cot\theta = \frac{1}{\tan\theta}$$

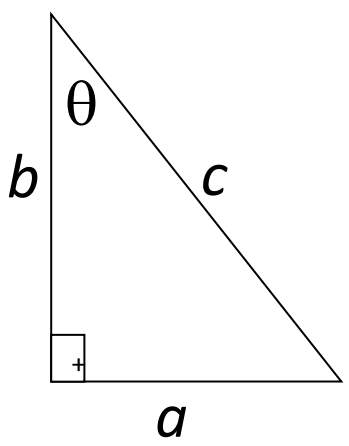
$$\sin\theta = \frac{1}{\csc\theta} \qquad \cos\theta = \frac{1}{\sec\theta} \qquad \tan\theta = \frac{1}{\cot\theta}$$

Since the hypotenuse is always the largest side of a right triangle,

$\sin\theta < 1$, $\cos\theta < 1$ and $\csc\theta > 1$, and $\sec\theta > 1$

Find the exact values of the six trigonometric functions for the angle θ.

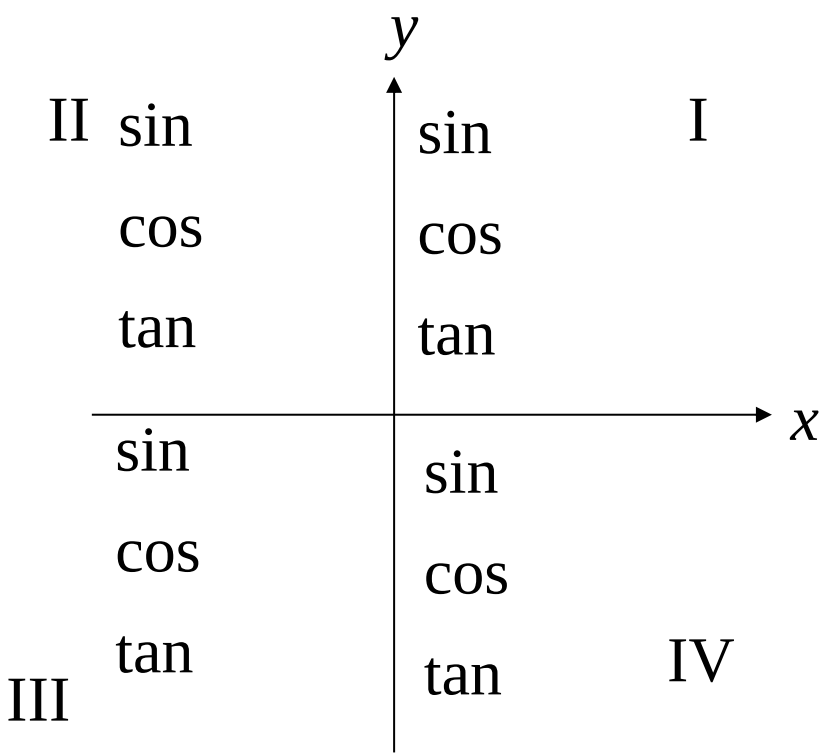




Think of sine and *y* as linked together

Think of cosine and *x* as linked together.

Tangent is sine/cosine or *y/x* or *slope*.



Find the exact value of the trigonometric functions

$\sin\theta = \frac{5}{7}$ in Quadrant I

$\tan\theta = \frac{-5}{7}$ in Quadrant IV

$\cot\theta = \frac{5}{7}$ in Quadrant III

$\csc\theta = 8$ in Quadrant II

Determine the quadrant which would contain the angle θ with the following conditions.

(a) $\sin\theta > 0$ and $\cos\theta < 0$

(b) $\sec\theta < 0$ and $\tan\theta > 0$

(c) $\csc\theta < 0$ and $\cos\theta > 0$

Find the exact value of the remaining trigonometric functions

$\sin\theta = \frac{-5}{8}$ and $\cos\theta < 0$

$\cot\theta = -4$ and $\sin\theta > 0$