The trigonometric functions were originally restricted for acute angles. These definitions can be extended to any angles by considering the standard position of an angle. Of course, if an angle is acute the new definitions should give the same result as the old definitions.

### Acute Angle

| Use the Pythagorean Theorem to find the length of the hypotenuse. |
| (Note that \( r \) is always positive.) |

### Definitions of Trigonometric Functions of Any Angle

Let \( \theta \) be an angle in standard position with \((x, y)\) a point on the terminal side of \( \theta \) and \[ r = \sqrt{x^2 + y^2} \neq 0. \]

\[
\begin{align*}
\sin \theta &= --- & \csc \theta &= --- \\
\cos \theta &= --- & \sec \theta &= --- \\
\tan \theta &= --- & \cot \theta &= ---
\end{align*}
\]

Evaluate the exact values of the six trigonometric functions of the angle \( \theta \).

1. [Image of point (-3, 4)]

2. [Image of point (-8, -15)]
The point given is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

3. \((3, -9)\)

4. \((-5, -6)\)

Recall the signs of the trigonometric functions in their four quadrants.
(remember that \(r\) is always positive)

5. Given \(\sin \theta = -\frac{2}{3}\) and \(\tan \theta > 0\), find \(\cos \theta\) and \(\cot \theta\).

6. Given \(\sin \theta = \frac{4}{5}\) and \(\tan \theta < 0\), find \(\cos \theta\) and \(\csc \theta\).

7. Given \(\tan \theta = -\frac{15}{8}\) and \(\sin \theta < 0\), find the values of the six trigonometric functions of \(\theta\).