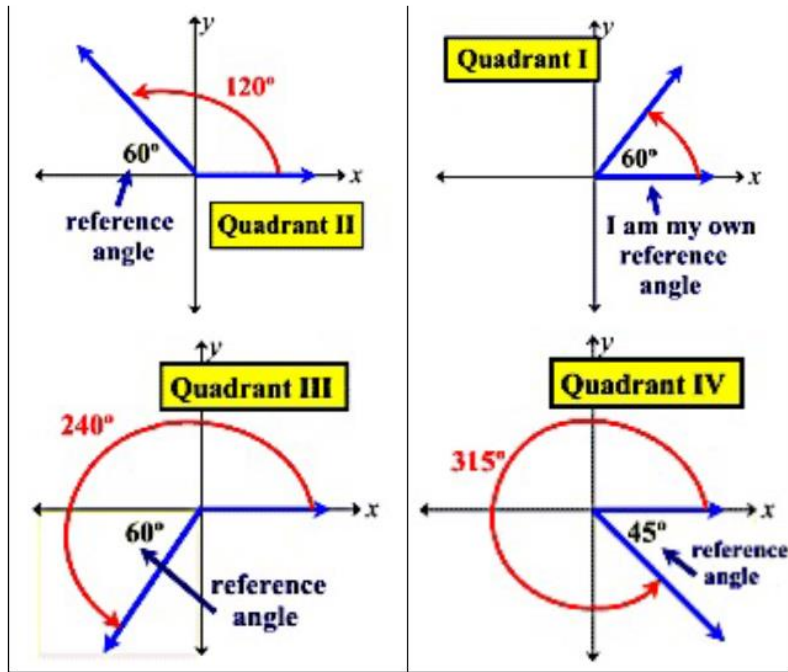


An angle drawn in standard position has a **reference angle**. The reference angle is an acute angle formed by the terminal side of the given angle to the x-axis.



Examples: Draw the angle in standard position and then find the reference angle.

<p>a) 150°</p>	<p>b) $\frac{7\pi}{6}$</p>	<p>c) -100°</p>
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Find the reference angle for each angle with the given measure.

d) -35°

e) 245°

f) -510°

g) $\frac{4\pi}{9}$

h) $\frac{-8\pi}{5}$

Reference Triangle

- Formed by “dropping” a perpendicular from the terminal ray of a standard position angle to the x-axis.

Example 1: If θ is an angle in standard position and $P(-3, 4)$ is a point on the terminal side of θ , what is the value of $\cos\theta$?

Example 2: If θ is an angle in standard position and $P(3, -2)$ is a point on the terminal side of θ , what is the value of $\csc\theta$?

On Your Own:

1. If θ is an angle in standard position and $P(-4, 3)$ is a point on the terminal side of θ , what is the value of $\sin\theta$?

2. If the terminal side of θ passes through point $(-8, -6)$, what is the value $\cos\theta$?

Sketch the angle in standard position in the coordinate plane that passes through each given point, and find all six trigonometric ratios for that point.

3) $(7, 24)$

4) $(8, 15)$

5) $(-3, 3\sqrt{3})$