

13.3. Advanced Algebra Trig Functions of General Angles (Part 1)

DATE: 5/6

Target 9.D. Determine the exact values of the six trigonometric functions given the terminal side of θ passing through a given point $P(x,y)$ or using reference triangles.



Reference Angles: a reference angle is the acute angle formed by the terminal side of θ and the x-axis.
between 0° and 90°

Reference Angle Rule

Quadrant I	Quadrant II	Quadrant III	Quadrant IV
<p>$\theta' = \theta$</p>	<p>$\theta' = 180^\circ - \theta$ $[\theta' = \pi - \theta]$ Radian meas.</p>	<p>$\theta' = \theta - 180^\circ$ $[\theta' = \theta - \pi]$ Rad. meas.</p>	<p>$\theta' = 360^\circ - \theta$ $[\theta' = 2\pi - \theta]$ Rad. meas.</p>

Reference \angle
 $\theta' = \theta$
 Theta prime

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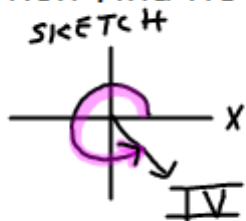
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Sketch each angle, and then find its reference angle.

1. 300°

$$\theta' = 360 - 300 = 60^\circ \checkmark$$



2. $\frac{2\pi}{3} \cdot \frac{180}{\pi} = -120^\circ$

1st find positive co-terminal \angle .

$$-120^\circ + 360^\circ = 240^\circ$$



$$\begin{aligned} \theta' &= 240 - 180 \\ &= 240 - 180 \\ &= 60^\circ \cdot \frac{\pi}{180} \\ &= \frac{\pi}{3} \checkmark \end{aligned}$$

3. 37°

$$\theta' = 37^\circ \checkmark$$



4. $\frac{3\pi}{4} \cdot \frac{180}{\pi} = 135^\circ$

$$\begin{aligned} \theta' &= 1\pi - \frac{3\pi}{4} \\ &= \frac{\pi}{4} \checkmark \end{aligned}$$

