

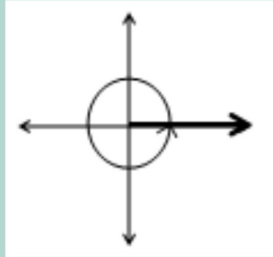
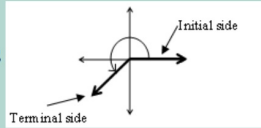
13.2 Angles and the Unit Circle

Standard Position of an Angle - When the vertex of the angle is at the origin and one ray is on the positive x-axis.

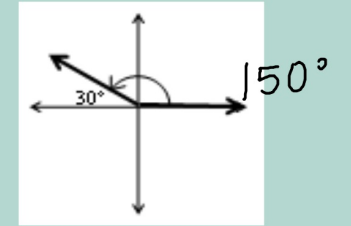
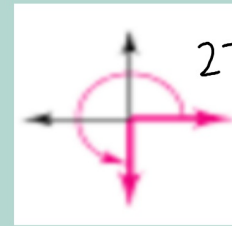
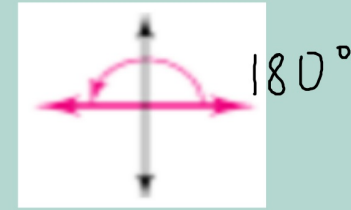
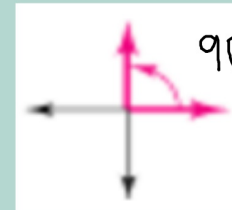
Initial Side of the Angle - The ray on the x-axis

Terminal Side of the Angle - The other ray.

One full rotation contains 360°



Find the measure of the following angles in standard position.

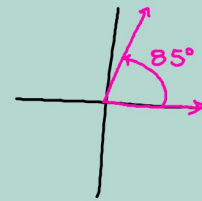


The measure of an angle is positive when the rotation from the initial side to the terminal side is in the counterclockwise direction. The measure is negative when the rotation is clockwise.

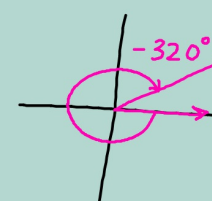


Sketch each angle in standard position.

85°



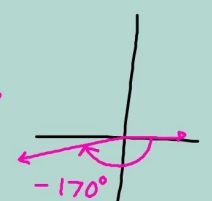
-320°



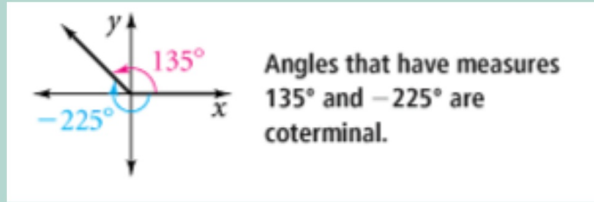
48°



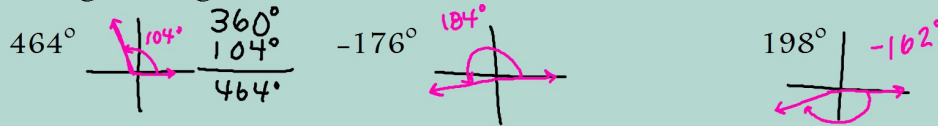
-170°



Coterminal Angles - Two angles in standard position that have the same terminal side.

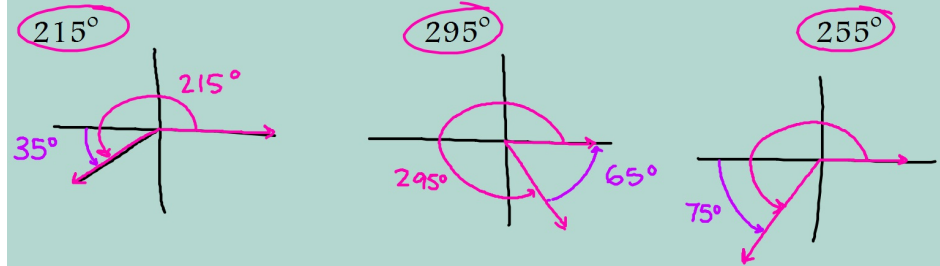


Find the measure of an angle between 0° and 360° coterminal with each given angle.



Reference Angles - Absolute Value of the angle from the terminal side and the **Nearest x-axis**.

Find the following reference angles.



Unit Circle - Radius is 1 and the center is at $(0, 0)$

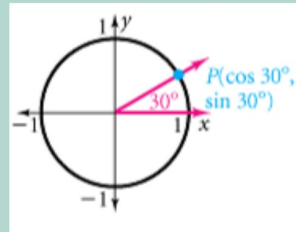
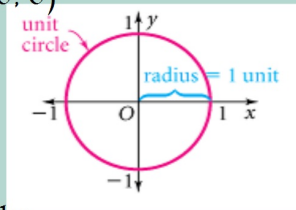
Definition - Cosine and Sine of an Angle

Suppose an angle in standard position has measure θ .

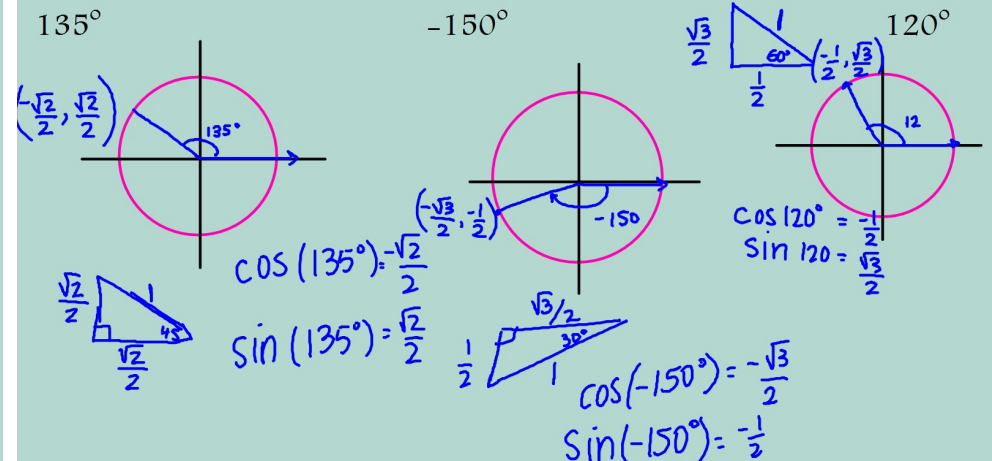
The **cosine of θ** ($\cos \theta$) is the x-coordinate of the point at which the terminal side of the angle intersects the unit circle.

The **sine of θ** ($\sin \theta$) is the y-coordinate.

$P(\cos \theta, \sin \theta)$



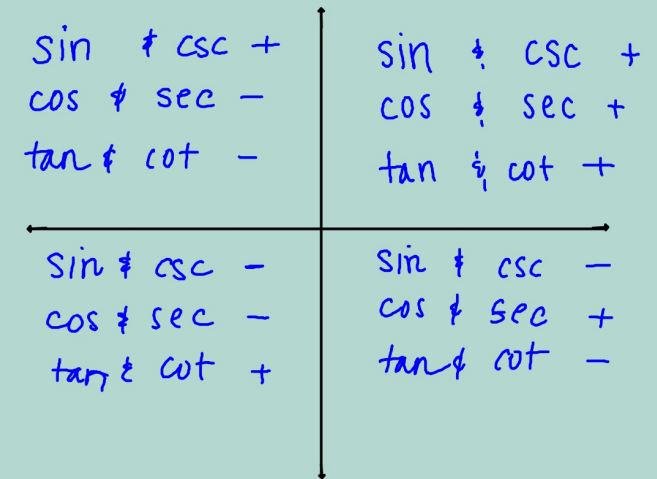
Draw each angle in a unit circle. Then find the cosine and sine of each angle.



Shortcut Chart	30°	45°	60°
sin θ	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos θ	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan θ	$\frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$	1	$\sqrt{3}$

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Quadrants and signs of trig functions.



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homework

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