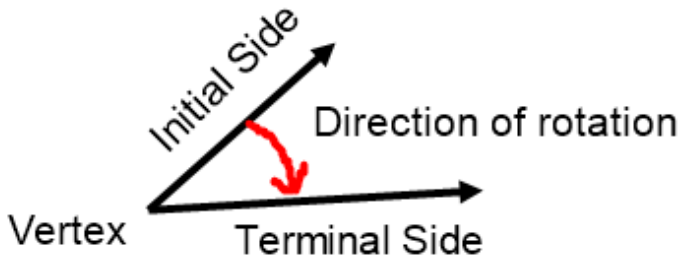
Lesson 6.1: Angles and Their Measures

Angle of Rotation

* 

* Counter-clockwise: Positive

* Clockwise: Negative

* Standard Position: Vertex is at the origin and the initial side is on the positive x-axis.

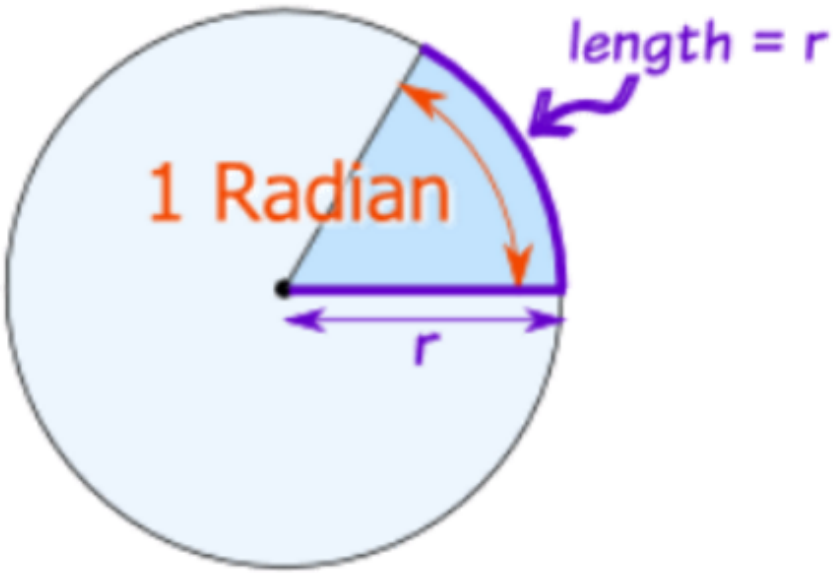
* Angles are **coterminal** when they share the same initial and terminal side.

Radian: the angle when a radius is wrapped around a circle.

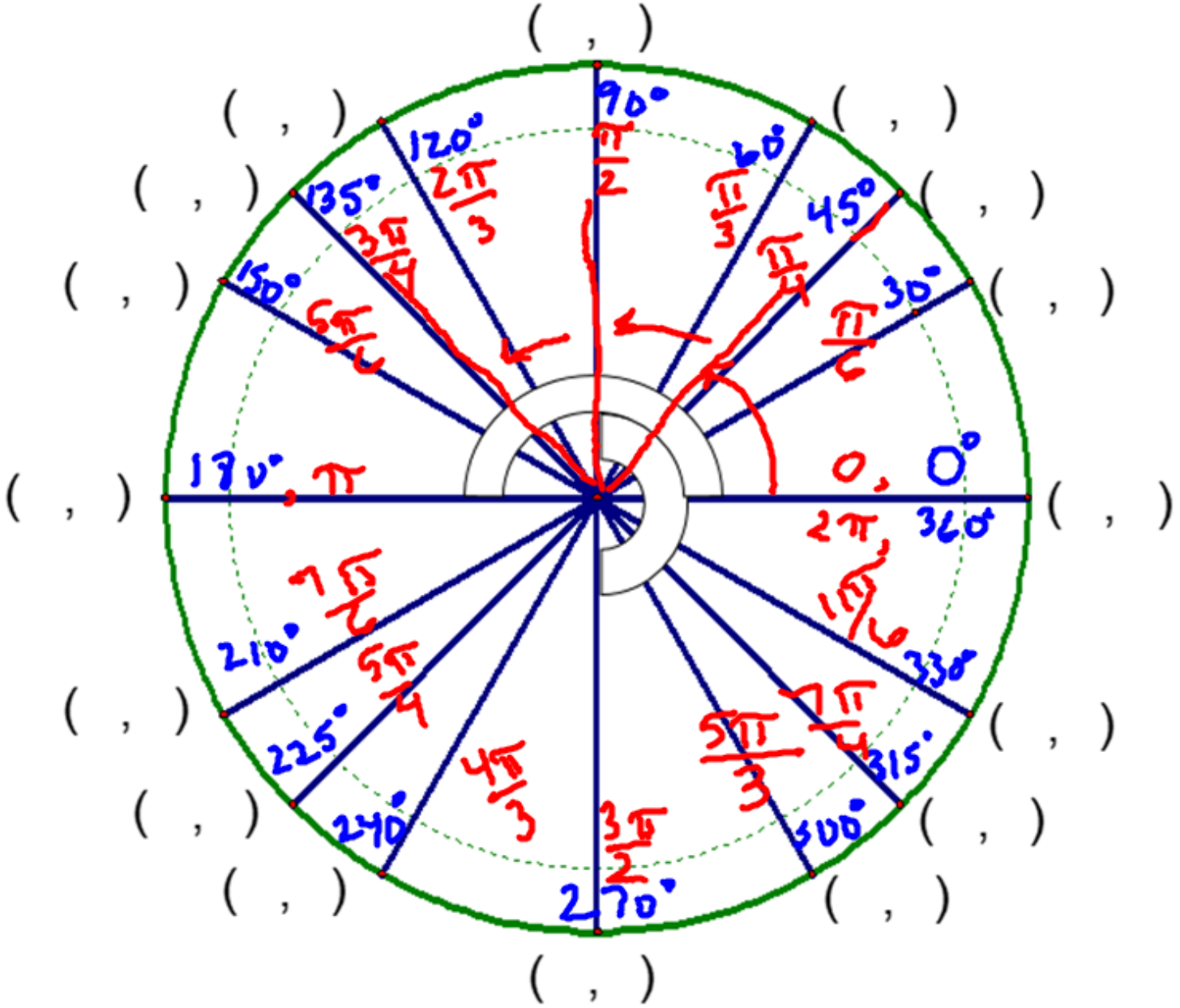
Units of Measure:

360 Degrees in full circle.

2π Radians in a full circle.



Unit Circle


(,)
90°
π/2
120°
2π/3
60°
π/3
135°
3π/4
45°
π/4
150°
5π/6
30°
π/6
180°, π
0, 0°
360°
2π
210°
7π/6
330°
11π/6
225°
5π/4
315°
7π/4
240°
4π/3
300°
5π/3
270°
3π/2

Draw the given angles of measure.

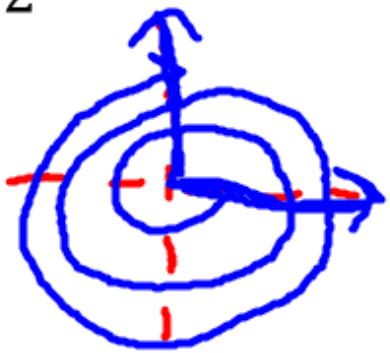
* $535°$

* $-305°$

* $\frac{17\pi}{6}$ $\frac{12\pi}{6} - \frac{12\pi}{6} = \frac{5\pi}{6}$

* $-\frac{9\pi}{4}$

* $-\frac{11\pi}{2}$ $-\frac{12\pi}{2} + \frac{8\pi}{2} = -\frac{3\pi}{2}$



$-\frac{9\pi}{4} + \frac{8\pi}{4} = -\frac{1\pi}{4}$

Convert to these angles to radians $\frac{\pi}{180}$

* $\frac{110^\circ \pi}{180^\circ} = \frac{11\pi}{18}$

* $-405^\circ \cdot \frac{\pi}{180} = \frac{-405\pi}{180} = -\frac{9\pi}{4}$

Convert these angles to degrees $\frac{180}{\pi}$

* $\frac{19\pi}{12} \cdot \frac{180}{\pi} = 285°$

* $-\frac{5\pi}{18} \cdot \frac{180}{\pi} = -50°$

* $-9 \cdot \frac{180}{\pi} = \boxed{\text{Exact } \frac{-1620°}{\pi}} \approx -515.66°$ approx.