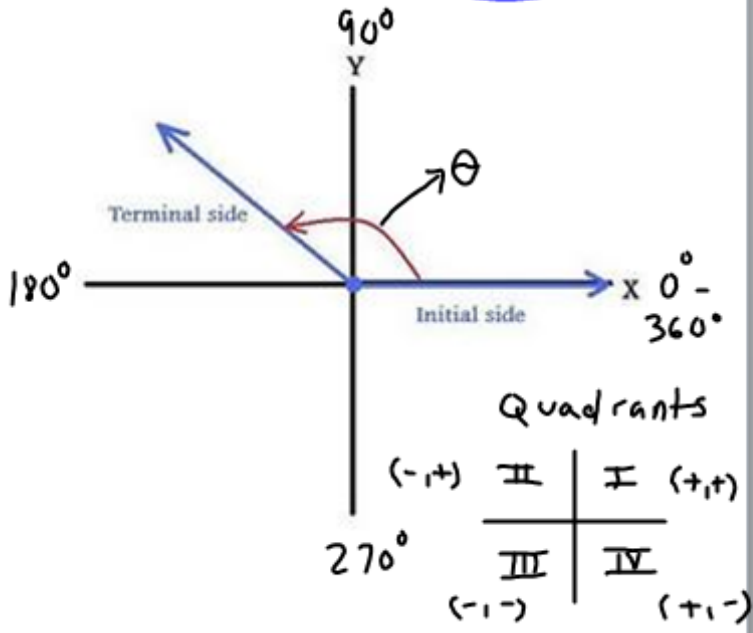
13.2. Advanced Algebra

DATE: 5/1

Angles and Angle Measure (Part 1)

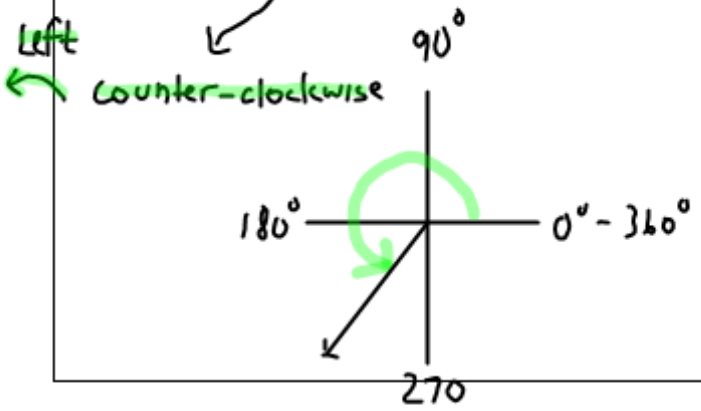
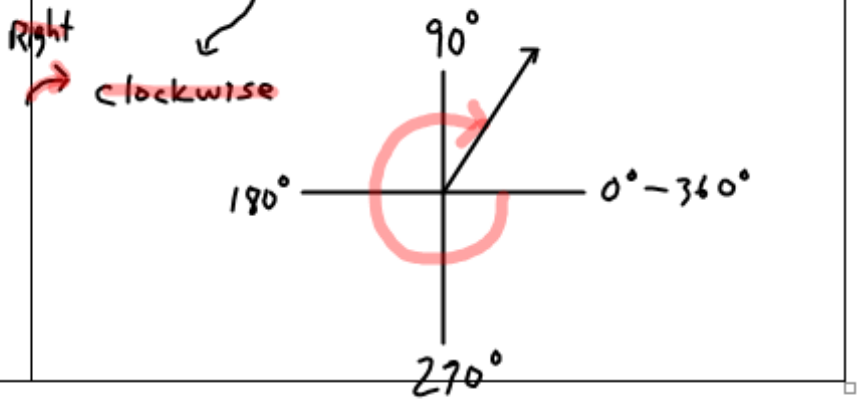
Target 9B. Draw an angle of rotation, find its coterminal angles and determine the quadrant in which it lands.
Target 9C. Understand how to move between radian measure and degree measure.

On a coordinate plane, an angle may be generated by the rotation of two rays that share a fixed endpoint at the origin. One ray, called the **initial side** of the angle is fixed along the positive x-axis (it doesn't move). The other ray, called the **terminal side** of the angle, can rotate about the center.



The measure of an angle is determined by the amount and direction of

The measure of an angle is determined by the amount and direction of rotation from the initial side to the terminal side.

Positive Angle Measure	Negative Angle Measure
	

Draw an Angle in Standard Position

Draw an angle with the given measure in standard position.

1) 240° 2) -30° 3) 450° 4) -210° 5) 540°

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Explanation

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Explanation

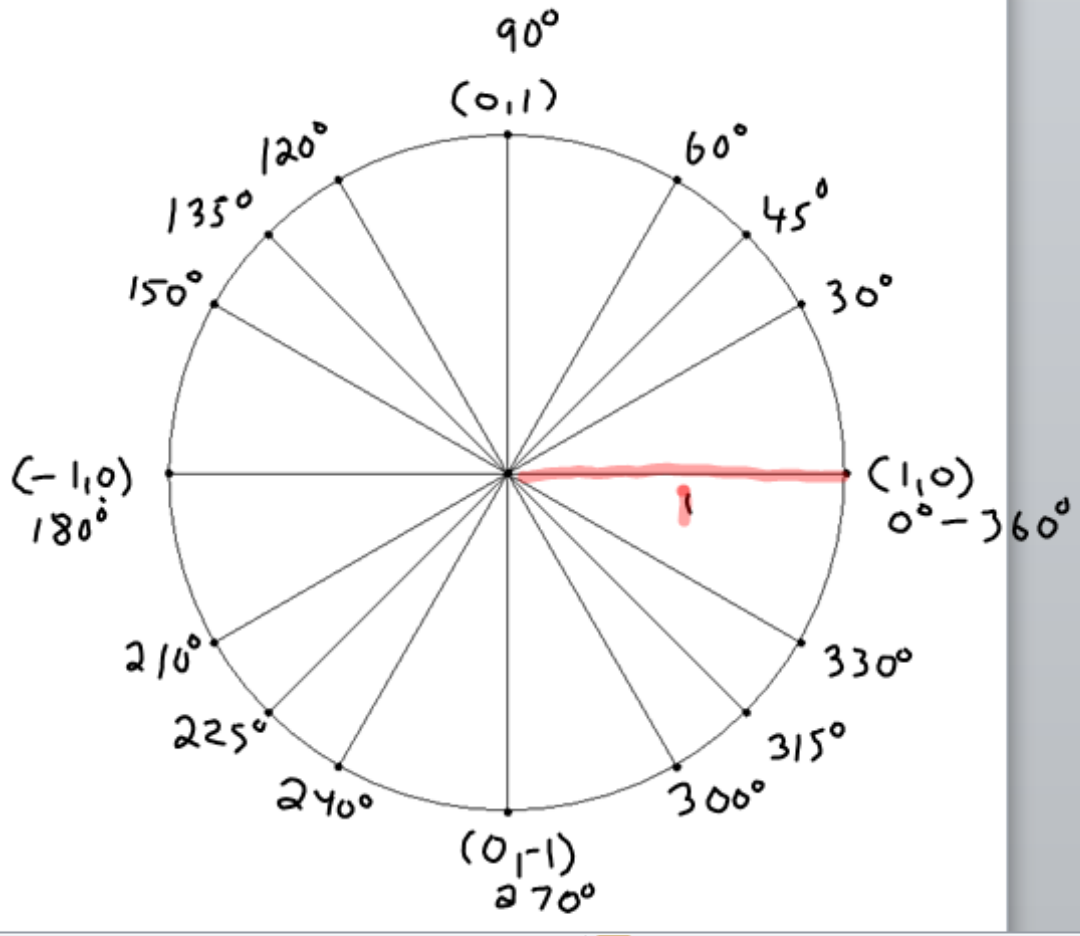
$$\frac{360^\circ}{2\pi} = \frac{2\pi(1)}{2\pi} \text{ rad}$$

$$\frac{360}{2\pi} = 1 \text{ rad}$$

$$\frac{180}{\pi} = 1 \text{ rad} \quad \checkmark$$

$$\frac{360^\circ}{360} = \frac{2\pi}{360} \text{ rad}$$

$$1^\circ = \frac{\pi}{180} \quad \checkmark$$



Convert between Degree and Radian Measure

Degree to Radian	Radian to Degree
Ex: 10° to Rad Multiply by $\frac{\pi}{180}$	Ex: $\frac{2\pi}{3}$ to Deg Multiply by $\frac{180}{\pi}$

Rewrite the degree measure in radians and the radian measure in degrees.

6) 30°

$$\frac{30}{1} \cdot \frac{\pi}{180} = \frac{30\pi}{180} = \frac{1\pi}{6}$$

$$\boxed{\frac{\pi}{6}}$$

7) $-\frac{5\pi}{3}$

$$-\frac{5\pi}{3} \cdot \frac{180}{\pi} = \frac{-5 \cdot 180}{3}$$

$$= \boxed{-300^\circ}$$