

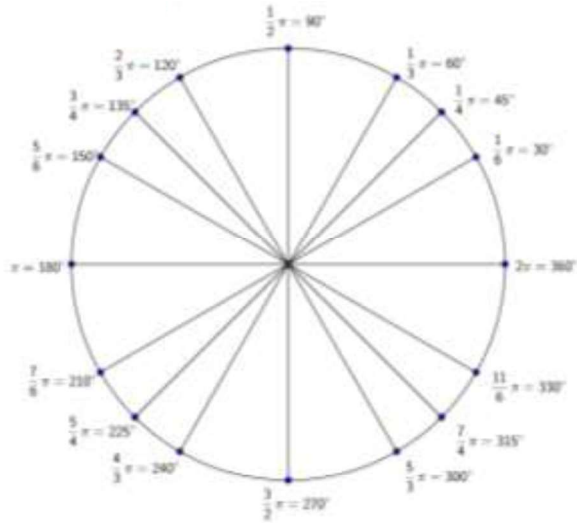
The Trigonometric Functions

8.2 – Angles & Radians

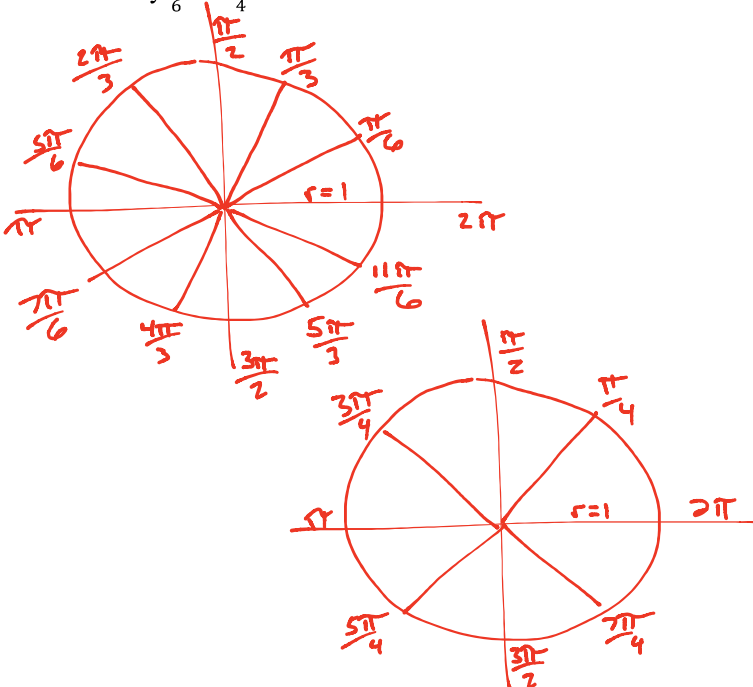
Radians: The radian measure of an angle in standard position is defined as the length of the corresponding arc on the unit circle.

Revolutions/Degrees/Radians Relationship

$$1 \text{ Rev} = 360^\circ = 2\pi \text{ radians}$$

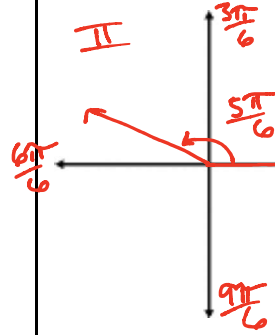


Draw a circle with radius 1 whose center is at the origin. Label each angle around the circle counting by $\frac{\pi}{6}$ and $\frac{\pi}{4}$.

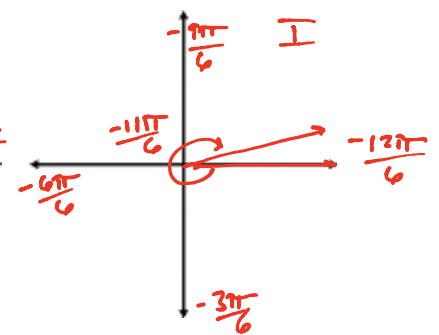


Ex A: Draw an angle in standard position with the given measure and identify the quadrant in which the terminal sides lies.

#1) $\frac{5\pi}{6}$

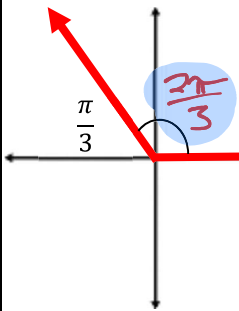


#2) $-\frac{11\pi}{6}$

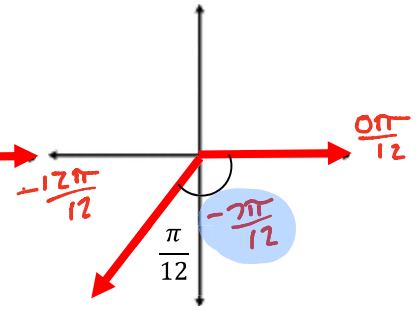


Ex B: Find the measure of each angle in radians.

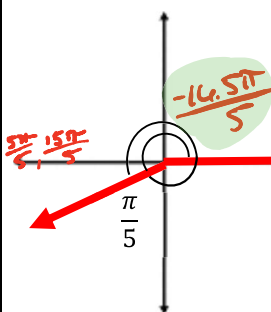
#1)



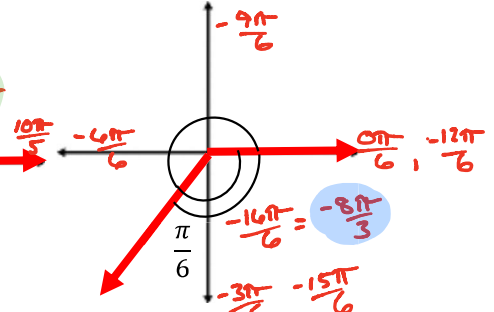
#2)



#3)



#4)



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Ex C: Find one positive angle and one negative angle that is coterminal with each angle.

#3) $\frac{7\pi}{6}$

positive $\frac{7\pi}{6} + \frac{12\pi}{6} = \frac{19\pi}{6}$

negative $\frac{7\pi}{6} - \frac{12\pi}{6} = -\frac{5\pi}{6}$

Ex D: Find a coterminal angle between 0 and 2π .

#4) $-\frac{5\pi}{4}$

$$-\frac{5\pi}{4} + \frac{8\pi}{4} = \frac{3\pi}{4}$$

Ex E: Find all angles that are coterminal with the given angle.

#1) $\frac{\pi}{12}$

$$\frac{\pi}{12} + 2\pi n, \text{ where } n \text{ is an integer}$$

Ex F: Convert to radians in terms of π

#1) 135°

$$\frac{135^\circ}{1} \cdot \frac{\pi}{180^\circ} = \frac{3\pi}{4}$$

#2) -45°

$$\frac{-45^\circ}{1} \cdot \frac{\pi}{180^\circ} = -\frac{\pi}{4}$$

Ex G: Convert to degrees

#1) 3π

$$\frac{3\pi}{1} \cdot \frac{180^\circ}{\pi} = 540^\circ$$

#2) $-\frac{2\pi}{3}$

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