

Key

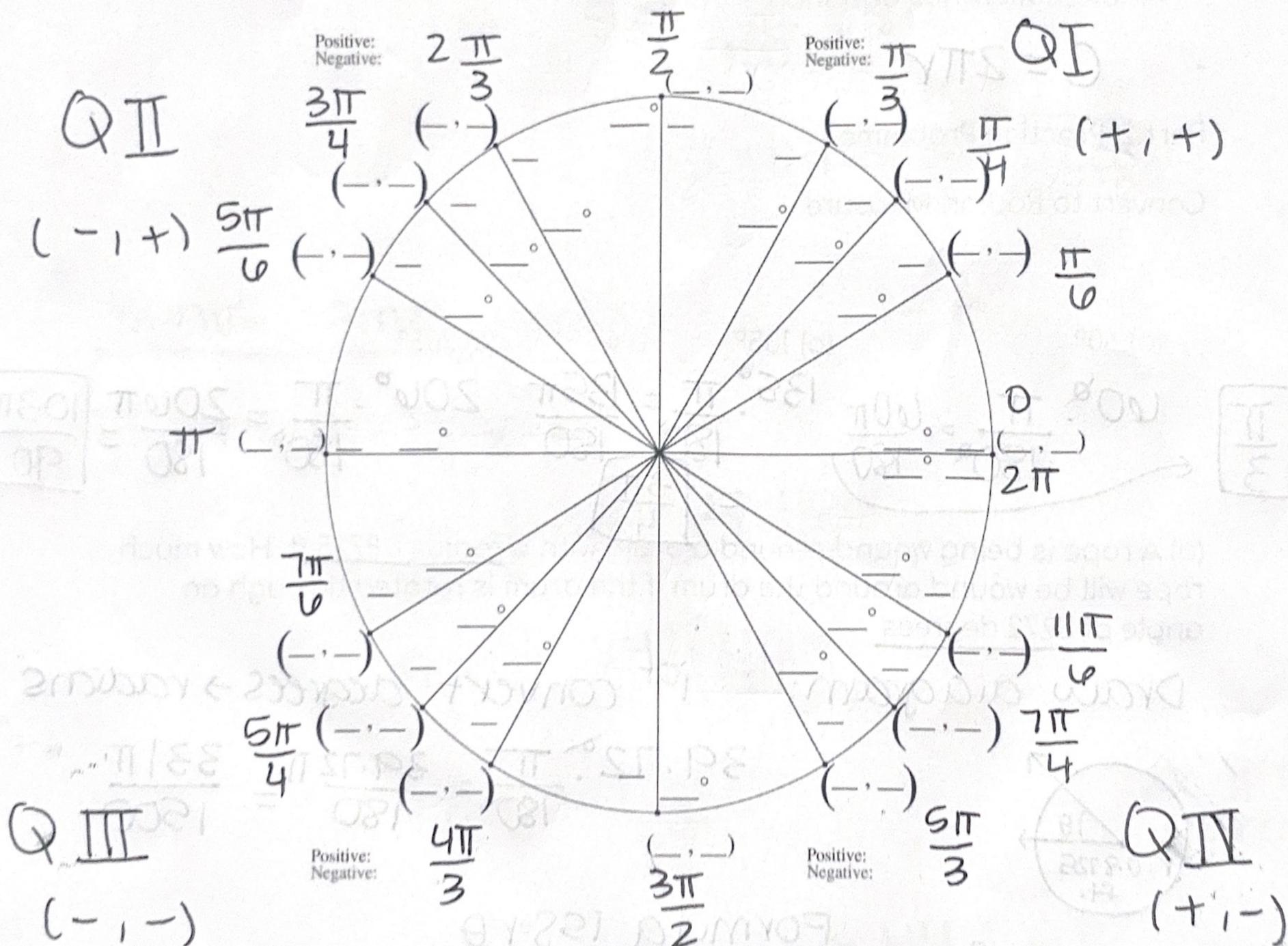
# Worksheet Math 1316 -Plane Trigonometry

## Unit 1 Quick Review - Unit Circle

### Tips and Tricks

- Write Q1, Q2, Q3, Q4
- Positive and Negatives
- Filling in Radians trick

## Fill in The Unit Circle



## Unit 2 Section 3.2 -Applications of Radian Measure

### Part 1: Fill in the Blank

1. One complete revolution is equal to  $2\pi$  radians

2. Formula Arc Length of a Circle equation is:

$$S = r \cdot \theta$$

-  $\theta$  must be in radians

- If the  $\theta$  is given in degrees convert by  $\frac{\pi}{180^\circ}$

- Unit circle radius is  $2\pi$

3. Formula of Area of a Sector

$$A = \frac{1}{2} r^2 \theta$$

4. Circumference equation

$$C = 2\pi r$$

Part 2: Practice Problems

Convert to Radian Measure

(a)  $60^\circ$       (b)  $135^\circ$       (c)  $206^\circ$

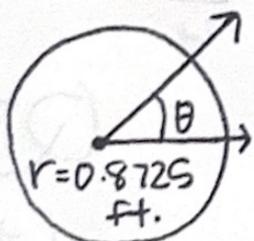
$$\boxed{\frac{\pi}{3}} \leftarrow 60^\circ \cdot \frac{\pi}{180^\circ} = \frac{60\pi}{180}$$

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

$$206^\circ \cdot \frac{\pi}{180^\circ} = \frac{206\pi}{180} = \boxed{\frac{103\pi}{90}}$$

(d) A rope is being wound around a drum with a radius 0.8725 ft. How much rope will be wound around the drum if the drum is rotated through an angle of 39.72 degrees

Draw diagram:      1st convert degrees  $\rightarrow$  radians



$$\theta = 39.72^\circ$$

$$39.72^\circ \cdot \frac{\pi}{180^\circ} = \frac{39.72\pi}{180} = \frac{331\pi}{1500}$$

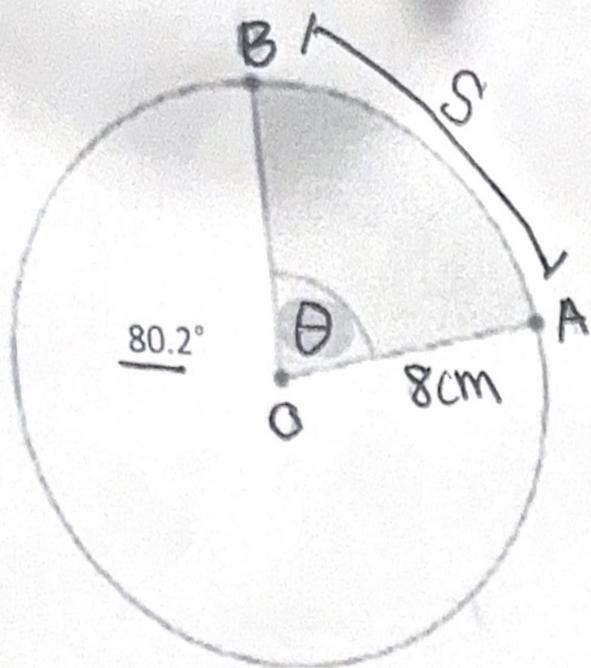
Formula is  $S = r\theta$

2nd plug in

$$S = \left( \frac{331\pi}{1500} \right) (0.8725)$$

$$S = 6.0856 \approx \boxed{6.09 \text{ ft.}}$$

(e) The following diagram shows a circle with a center (O) and a radius of 8cm. Points A and B lie on the circle and  $\angle AOB = 80.2^\circ$ . Find the length of the arc AB



$$\text{Formula} = S = r \cdot \theta$$

1st degrees  $\rightarrow$  radians

$$80.2^\circ \cdot \frac{\pi}{180^\circ} = \frac{80.2\pi}{180} = \frac{401\pi}{900}$$

$$S = \left( \frac{401\pi}{900} \right) (8 \text{ cm})$$

$$S = 11.198 \approx \boxed{11.2 \text{ cm}}$$

Bonus Find Area:

$$\text{Formula} = A = \frac{1}{2} r^2 \theta$$

$$A = \frac{1}{2} (\cancel{4000})^2 \left( \frac{401\pi}{900} \right)$$

$$A = \frac{1}{2} (64) \left( \frac{401\pi}{900} \right)$$

$$A = 32 \left( \frac{401\pi}{900} \right)$$

$$A = 44.7921 \approx 44.8 \text{ cm}^2 \swarrow$$

b/c it's area!