

Quiz 9

Name: Key

Math 115, Fall 2016

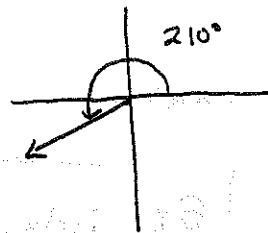
Thursday Discussion Time: _____

Directions: You have 20 minutes to complete this quiz. Read each problem carefully. There are three problems on the back of this page. Please put a box around your answers. No calculators are allowed.

1. (2 points)

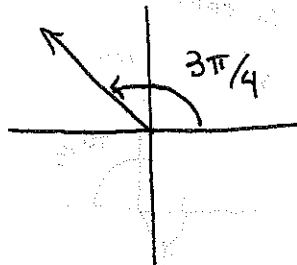
(a) Sketch the angle 210° in standard position.

$$210^\circ = 180^\circ + 30^\circ$$



(b) Sketch the angle $\frac{3\pi}{4}$ radians in standard position.

$$\frac{3\pi}{4} = \frac{\pi}{2} + \frac{\pi}{4}$$



2. (2 points)

(a) Convert 150° to radians.

$$150^\circ \times \frac{\pi}{180} = \frac{15\pi}{18} = \boxed{\frac{5\pi}{6} \text{ radians}}$$

(b) Convert $\frac{\pi}{2}$ radians to degrees.

$$\frac{\pi}{2} \text{ radians} = \boxed{90^\circ}$$

3. (1 points)

What is the angle in degrees swept out by the second-hand of a clock in a 10 second interval?

$$\frac{10}{60} = \frac{1}{6}, \quad \frac{1}{6} \text{ of } 360^\circ = \boxed{60^\circ}$$

4. (2 points)

If the second-hand of a clock is 5 inches long, how far does the tip of the hand move in 15 seconds? Leave your answer in exact form.

$$15 \text{ seconds} \longleftrightarrow \frac{\pi}{2} \text{ radians}$$

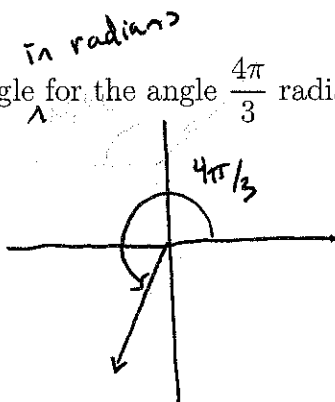
distance equals

$$\boxed{\frac{5\pi}{2} \text{ inches}}$$

5. (3 points)

(a) What is the reference angle for the angle $\frac{4\pi}{3}$ radians?

$$\frac{4\pi}{3} = \pi + \frac{\pi}{3}$$



$$\boxed{\text{reference angle: } \frac{\pi}{3} \text{ radians}}$$

(b) Evaluate $\cos\left(\frac{4\pi}{3}\right)$. $\frac{4\pi}{3}$ is in the third quadrant, so

$$\cos\left(\frac{4\pi}{3}\right) = -\cos\left(\frac{\pi}{3}\right) = \boxed{-\frac{1}{2}}$$

(c) Evaluate $\sin\left(\frac{4\pi}{3}\right)$.

$$\sin\left(\frac{4\pi}{3}\right) = -\sin\left(\frac{\pi}{3}\right) = \boxed{-\frac{\sqrt{3}}{2}}$$