

MATH 1080 TRIGONOMETRY

7.1 Worksheet

Name KEY
Date _____

1. Convert -225° to radians.

$$(-225)\left(\frac{\pi}{180}\right) = \frac{-225\pi}{180} \begin{matrix} \div 45 \\ \div 45 \end{matrix}$$

$$= \frac{-5\pi}{4}$$

2. Convert $\frac{8\pi}{5}$ to degrees.

$$\left(\frac{8\pi}{5}\right)\left(\frac{180}{\pi}\right) = 288^\circ$$

3. Determine the measure of an angle θ , that is coterminal with -840° such that $0 < \theta \leq 360^\circ$.

$$-840 + (360)(3) = -840 + 1080$$

$$= 240$$

4. Determine the measure of an angle θ , that is coterminal with $\frac{17\pi}{3}$ such that $0 < \theta \leq 2\pi$.

$$\frac{17\pi}{3} - \left(\frac{6\pi}{3}\right)(2) = \frac{17\pi}{3} - \frac{12\pi}{3}$$

$$= \frac{5\pi}{3}$$

5. For a circle with diameter 12 inches, determine the length of an arc subtended by the central angle of 220° . Round to the nearest hundredth.



$$r = 6\text{ in}$$

$$\theta = 220\left(\frac{\pi}{180}\right)$$

$$\theta = \frac{11\pi}{9}$$

$$s = r\theta$$

$$s = (6)\left(\frac{11\pi}{9}\right)$$

$$s = \frac{22\pi}{3} \quad s \approx 23.04\text{ in}$$

6. Determine the area of a sector of a circle that has a central angle of $\frac{3\pi}{2}$, and a radius of 4 cm.

State the exact value, and the approximate value to the nearest tenth.



$$r = 4\text{ cm}$$

$$\theta = \frac{3\pi}{2}$$

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

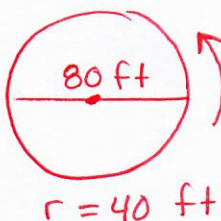
$$A = \frac{1}{2}\left(\frac{3\pi}{2}\right)(4)^2$$

$$A = \left(\frac{3\pi}{4}\right)(16)$$

$$A = 12\pi\text{ cm}^2$$

$$A \approx 37.7\text{ cm}^2$$

7. The diameter of a Ferris wheel is 80 feet. If the Ferris wheel makes one revolution every 45 seconds, determine the linear velocity of a person riding in the Ferris wheel. Round to the nearest tenth.



$$\frac{1\text{ rev}}{45\text{ sec}}$$

$$\omega = \left(\frac{1\text{ rev}}{45\text{ sec}}\right)\left(\frac{2\pi\text{ rad}}{1\text{ rev}}\right)$$

$$\omega = \frac{2\pi\text{ rad}}{45\text{ sec}}$$

$$v = r\omega$$

$$v = (40\text{ ft})\left(\frac{2\pi\text{ rad}}{45\text{ sec}}\right)$$

$$v = \frac{16\pi}{9}\frac{\text{ft}}{\text{sec}}$$

$$v \approx 5.6\frac{\text{ft}}{\text{sec}}$$