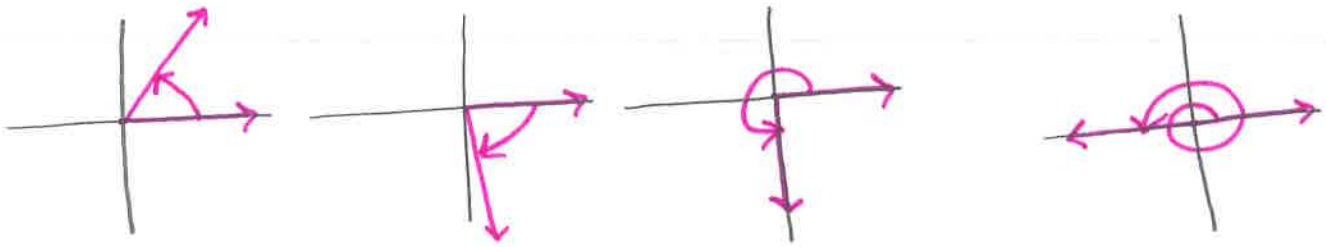
Name: Cornely

Chapter 4 Review Problems

1. Sketch each angle, in standard position.

A) 60° B) -80° C) 3π/2 D) 3π



2. Which angle pairs are coterminal?

A) 180° and 360° B) 37° and 397° C) -90° and -450° D) 3π/2 and 5π

No! Yes! Yes!

$\frac{3\pi}{2} + \frac{4\pi}{2} = \frac{7\pi}{2} + \frac{4\pi}{2}$

$= \frac{11\pi}{2} > 5\pi$

No!

3. Find the degree and radian measure of the angle in standard position formed by rotating the terminal side by the given amount.

A) 1/6 of a circle

$\frac{1}{6}(360) = 60^\circ$ or $\frac{\pi}{3}$ radians

B) 1/60 of a circle

$\frac{1}{60}(360) = 6^\circ$ or $\frac{\pi}{30}$ radians

4. Change to degrees.

A) -12π/18

$\frac{-12\pi}{18} \cdot \frac{180}{\pi} = -120^\circ$

B) 3π

540°

C) 4π/11

$\frac{4\pi}{11} \cdot \frac{180}{\pi}$

65.45°

D) -3π/8

$\frac{-3\pi}{8} \cdot \frac{180}{\pi}$

-67.5°

5. Change to radians.

A) 27°

$\frac{27}{1} \cdot \frac{\pi}{180} = \frac{3\pi}{20}$

B) 18°

$\frac{18}{1} \cdot \frac{\pi}{180} = \frac{\pi}{10}$

C) -260°

$\frac{-260}{1} \cdot \frac{\pi}{180} = \frac{-13\pi}{9}$

D) -1200°

$\frac{-1200}{1} \cdot \frac{\pi}{180} = \frac{-20\pi}{3}$

6. Find the radian measure of 4 coterminal angles.

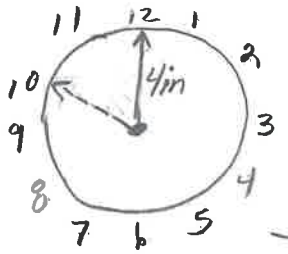
A) $\pi/6 + \frac{12\pi}{6}$

$\frac{13\pi}{6}, \frac{25\pi}{6}, \frac{37\pi}{6}, \frac{49\pi}{6}$

B) $-9\pi/7 + \frac{14\pi}{7}$

$\frac{5\pi}{7}, \frac{19\pi}{7}, \frac{33\pi}{7}, \frac{47\pi}{7}$

7. The second hand of a clock is 4 inches long. How far does the tip move in 1 minute 50 seconds?



$\frac{360^\circ}{12} = 30^\circ(10) = 300^\circ$ in 50sec

$+360$ in 1min

660° in 1min 50sec

$\frac{660}{1} \cdot \frac{\pi}{180} = \frac{11\pi}{3}$ radians

$S = r\theta$

$S = 4\left(\frac{11\pi}{3}\right) =$ 46.08 inches

8. If the radius of a circle is 8 cm and the arc length is 500 cm, what is the radian measure of the angle θ?

$S = r\theta$

$500 = 8\theta$

$\theta =$ 62.5 radians

9. If the diameter of a circle is 11 cm and the central angle is 2.5 radians, find the arc length.

$S = r\theta$

$S = 5.5(2.5)$

$S =$ 13.75

10. A riding lawn mower has wheels that are 15 inches in diameter, which are turning at 2.5 revolutions per second.

A) What is the angular speed of a wheel?

$$\omega = \frac{2.5(2\pi)}{1\,sec} = \boxed{5\pi \text{ rads/sec}}$$

B) How fast is the lawn mower traveling in miles per hour?

$$V = \frac{7.5\,(2.5)(2\pi)\,inches}{1\,sec} = \frac{37.5\pi\,in}{1\,sec} \cdot \frac{1\,ft}{12\,in} \cdot \frac{1\,mi}{5280\,ft} \cdot \frac{3600\,sec}{1\,hr}$$

$$\boxed{6.69\ mph}$$

11. A merry-go-round horse is traveling at 10 feet per second when the merry-go-round is making 6 revolutions per minute. How far is the horse from the center of the merry-go-round?

$$V = 10\,ft/sec = \frac{10\,ft}{1\,sec} \cdot \frac{60\,sec}{1\,min} = \frac{600\,ft}{1\,min}$$

revolutions = 6/min

looking for the radius!

$$\frac{600\,ft}{1\,min} = \frac{r \cdot 6 \cdot 2\pi\,ft}{1\,min}$$

$$600\,ft = 12\pi r\,ft$$

$$r = \boxed{15.9\overline{2}\text{ feet from the center}}$$