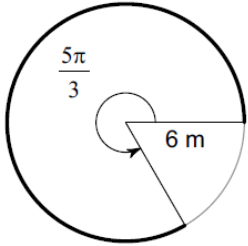


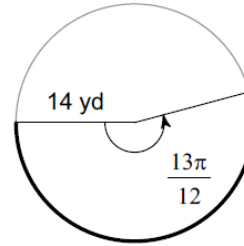
## Unit 2.3 Application of Radian Measure PRACTICE

Find the length of each arc.

1)



2)



3)  $r = 14 \text{ cm}, \theta = \frac{5\pi}{6}$

4)  $r = 10 \text{ yd}, \theta = \frac{5\pi}{4}$

5)  $r = 12 \text{ m}, \theta = \frac{7\pi}{6}$

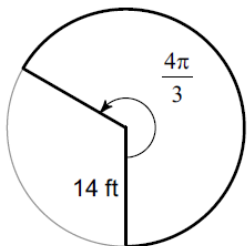
6)  $r = 10 \text{ in}, \theta = \frac{7\pi}{6}$

7)  $r = 15 \text{ km}, \theta = \frac{\pi}{3}$

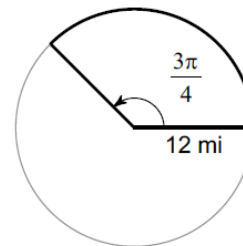
8)  $r = 10 \text{ yd}, \theta = \frac{5\pi}{3}$

Find the area of each sector.

9)



10)



11)  $r = 6 \text{ yd}, \theta = \frac{3\pi}{4}$

12)  $r = 8 \text{ ft}, \theta = \frac{\pi}{2}$

13)  $r = 13 \text{ yd}, \theta = \frac{5\pi}{12}$

14)  $r = 13 \text{ in}, \theta = \frac{2\pi}{3}$

15)  $r = 19 \text{ yd}, \theta = \frac{7\pi}{4}$

16)  $r = 3 \text{ cm}, \theta = \frac{7\pi}{4}$

For #17 and #18 use Earth's radius is 6400 km.

17. **Latitude of Madison** Madison, South Dakota, and Dallas, Texas, are 1200 km apart and lie on the same north-south line. The latitude of Dallas is  $33^\circ$  N. What is the latitude of Madison?

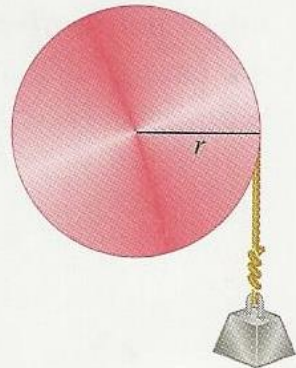
18. **Latitude of Toronto** Charleston, South Carolina, and Toronto, Canada, are 1100 km apart and lie on the same north-south line. The latitude of Charleston is  $33^\circ$  N. What is the latitude of Toronto?

19. **Pulley Raising a Weight**

- (a) How many inches will the weight in the figure rise if the pulley is rotated through an angle of  $71^\circ 50'$ ?
- (b) Through what angle, to the nearest minute, must the pulley be rotated to raise the weight 6 in.?



20. **Pulley Raising a Weight** Find the radius of the pulley in the figure if a rotation of  $51.6^\circ$  raises the weight 11.4 cm.



21. **Rotating Wheels** The rotation of the smaller wheel in the figure causes the larger wheel to rotate. Through how many degrees will the larger wheel rotate if the smaller one rotates through  $60.0^\circ$ ?

