

## 9.3 Radians

**Convert each degree measure into radians.**

1)  $230^\circ$

2)  $320^\circ$

3)  $80^\circ$

4)  $200^\circ$

5)  $-250^\circ$

6)  $210^\circ$

**Convert each radian measure into degrees.**

7)  $\frac{5\pi}{6}$

8)  $\frac{10\pi}{9}$

9)  $\frac{\pi}{6}$

10)  $\frac{19\pi}{12}$

11)  $\frac{3\pi}{2}$

12)  $\frac{2\pi}{3}$

**Find the exact value of each trigonometric function.**

13)  $\tan -\frac{5\pi}{3}$

14)  $\cos -\frac{\pi}{4}$

15)  $\sin \pi$

16)  $\cos -\frac{7\pi}{6}$

17)  $\sin 0$

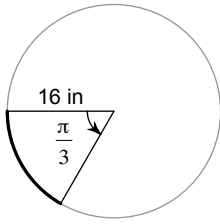
18)  $\tan \frac{4\pi}{3}$

19)  $\sin -\frac{7\pi}{6}$

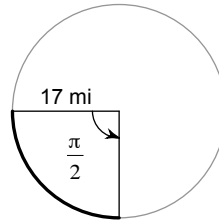
20)  $\sin \frac{2\pi}{3}$

Find the length of each arc.

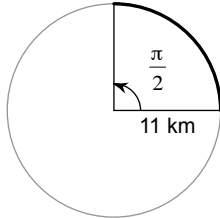
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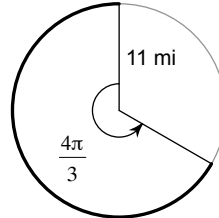
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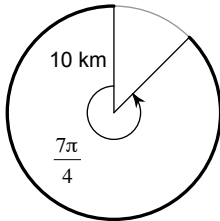
23)



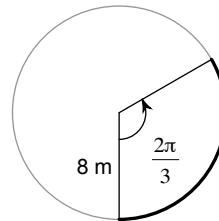
24)



25)



26)



27) A geostationary satellite is positioned 35,800 km above Earth's surface. It takes 24 hours to complete one orbit. The radius of Earth is about 6400km.

a. What distance does the satellite travel in 1 hr? 3 hr? 2.5 hr? 25 hr?

b. After how many hours has the satellite traveled 200,000 km?

28) Suppose a windshield wiper has a length of 22 in. and rotates through an angle of  $110^\circ$ . What distance does the tip of the wiper travel as it moves once across the windshield?