

**EXAMPLE 1** Working with DMS Measure

- (a) Convert  $37.425^\circ$  to DMS.
- (b) Convert  $42^\circ 24' 36''$  to degrees.

Albert Juarez's truck has wheels 36 inches in diameter. If the wheels are rotating at 630 rpm (revolutions per minute), find the truck's speed in miles per hour.

In Exercises 1–4, convert from DMS to decimal form.

1.  $23^{\circ}12'$

2.  $35^{\circ}24'$

3.  $118^{\circ}44'15''$

4.  $48^{\circ}30'36''$

In Exercises 5–8, convert from decimal form to degrees, minutes, seconds (DMS).

5.  $21.2^{\circ}$

6.  $49.7^{\circ}$

7.  $118.32^{\circ}$

8.  $99.37^{\circ}$

In Exercises 17–24, convert from radians to degrees.

17.  $\pi/6$

19.  $\pi/10$

21.  $7\pi/9$

23. 2

In Exercises 9–16, convert from DMS to radians.

**9.**  $60^\circ$

**10.**  $90^\circ$

**11.**  $120^\circ$

**12.**  $150^\circ$

**13.**  $71.72^\circ$

**14.**  $11.83^\circ$

To the nearest inch, find the perimeter of a 10-degree sector cut from a circular disc of radius 11 inches.

**Multiple Choice** A bicycle with 26-inch-diameter wheels is traveling at 10 miles per hour. To the nearest whole number, how many revolutions does each wheel make per minute?

(A) 54

(B) 129

(C) 259

(D) 406

(E) 646

In Exercises 9–18, assume that  $\theta$  is an acute angle in a right triangle satisfying the given conditions. Evaluate the remaining trigonometric functions.

16.  $\csc \theta = \frac{12}{5}$

In Exercises 41–48, find the acute angle  $\theta$  that satisfies the given equation. Give  $\theta$  in both degrees and radians. You should do these problems without a calculator.

41.  $\sin \theta = \frac{1}{2}$

42.  $\sin \theta = \frac{\sqrt{3}}{2}$

43.  $\cot \theta = \frac{1}{\sqrt{3}}$

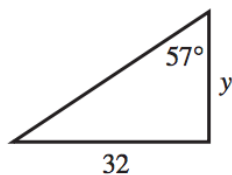
44.  $\cos \theta = \frac{\sqrt{2}}{2}$

45.  $\sec \theta = 2$

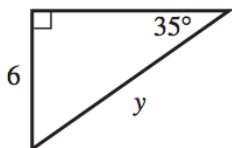
46.  $\cot \theta = 1$

Solve for  $y$

51.



53.



In Exercises 25–36, evaluate without using a calculator by using ratios in a reference triangle.

26.  $\tan 300^\circ$

28.  $\csc \frac{3\pi}{4}$

30.  $\cos \frac{7\pi}{3}$

32.  $\cot \frac{13\pi}{4}$

34.  $\cos \frac{17\pi}{4}$

36.  $\cot \frac{19\pi}{6}$

In Exercises 43–48, evaluate without using a calculator.

43. Find  $\sin \theta$  and  $\tan \theta$  if  $\cos \theta = \frac{2}{3}$  and  $\cot \theta > 0$ .

44. Find  $\cos \theta$  and  $\cot \theta$  if  $\sin \theta = \frac{1}{4}$  and  $\tan \theta < 0$ .

45. Find  $\tan \theta$  and  $\sec \theta$  if  $\sin \theta = -\frac{2}{5}$  and  $\cos \theta > 0$ .

## Graph two periods

$$y = 0.5 \cos 3x$$

$$y = 4 \sin \frac{x}{4}$$

## Graph two periods

62.  $y = -3.5 \sin \left( 2x - \frac{\pi}{2} \right) - 1$

Graph two periods

**23.**  $y = 3 \csc x$

**24.**  $y = 2 \tan x$

Graph two periods

**25.**  $y = -3 \cot \frac{1}{2}x$

**26.**  $y = -2 \sec \frac{1}{2}x$



