Supplementary Problems – Section 4.4

Use a calculator to approximate two values of θ $(0° \leq θ < 360°)$ that satisfy the equation.
Round the values to two decimal places.

1. $\sin θ = 0.8191$ 54.99
    125.01

2. $\cos θ = 0.8746$ 29
    331

3. $\cot θ = -1.5047$ 146.39
    326.39

4. $\csc θ = -1.3612$ 227.28
    312.72

Use a calculator to approximate two values of θ $(0 \leq θ < 2π)$ that satisfy the equation.
Round the values to three decimal places.

5. $\cos θ = 0.9848$ 0.175
    6.109

6. $\tan θ = 1.192$ 0.873
    4.014

7. $\sin θ = 0.0175$ 0.018
    3.124

8. $\cot θ = 5.671$ 0.175
    3.316

9. $\sec θ = -2.6667$ 1.955
    4.328

10. $\csc θ = -1.3214$ 4.00
    5.425

Co-function Problems

1. $\sin 65° \approx 0.0963$ $\cos 65° \approx 0.4226$
    $\tan 65° \approx 2.145$ $\cot 65° \approx 0.4663$
    $\sec 65° \approx 2.366$ $\csc 65° \approx 1.103$
    Find the six function values of 25°

Fill in the blank:

2. If $\cos° 50 \approx 0.7660$, then $\sin$ _____ ≈ 0.7660

3. If $\csc \frac{2π}{7} \approx 1.2790$, then $\sec$ _____ ≈ 1.2790

4. If $\csc \frac{3π}{10} \approx 1.3764$, then $\sec$ _____ ≈ 1.3764

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Change each degree measure to radian measure.

1. 140° $\frac{7\pi}{9}$

2. 860° $-\frac{43\pi}{9}$

3. 1200° $\frac{20\pi}{3}$

4. −300° $-\frac{5\pi}{3}$

5. −405° $-\frac{9\pi}{4}$

6. 280° $\frac{14\pi}{9}$

Change each radian measure to degree measure.

7. $\frac{-3\pi}{5}$ −108

8. $\frac{11\pi}{3}$ 660°

9. $\frac{2\pi}{7}$ $\frac{360°}{7}$

10. $-4\frac{1}{2}\pi$ −810°

11. $\frac{-12\pi}{5}$ −432°

12. $\frac{8\pi}{5}$ 288°

13. $\frac{3\pi}{5}$ 108°

14. $\frac{\pi}{5}$ 36°

15. $-\frac{\pi}{3}$ −60°

Find the exact value of each trigonometric function.

1. tan (510°) $\frac{1}{\sqrt{3}}$

2. csc $\frac{11\pi}{4}$ $\sqrt{2}$

3. sin (−90°) −1

4. cot 1665° 1

5. cot 30° $\sqrt{3}$

6. tan 315° −1

7. csc $\frac{\pi}{4}$ $\sqrt{2}$

8. tan $\frac{4\pi}{3}$ $\sqrt{3}$

9. cot 1110° $\sqrt{3}$

10. cos 270° 0

11. csc (−45°) $-\sqrt{2}$

12. sin 30° $\frac{1}{2}$

13. sec 2π 1

14. cot (−30°) $-\sqrt{3}$

15. csc 3π und

4.4 extra problems

Find the value of θ in radians and in degrees.

1. sin θ = 0.4565   QI QII
27.16 152.84
.47 2.67

2. cos θ = 0.8746   QI QIV
29 321
.51 5.78

3. cot θ = 2.3545   QI QIII
23. 203
.40 3.5

4. sec θ = 1.3746   QI QIV
42.32 316.78
.76 5.52

1)

24

a) $AL = \frac{2}{3} \cdot 24$

$= 16 in$

b) $AL = \frac{3\pi}{5} \cdot 24 = \frac{84\pi}{5} = 45.24 in$

c) $AL = 75 \cdot \frac{\pi}{180} \cdot 24 = 31.42 in$

2)

15

a) $15 = 1 \cdot r$

$r = 15 in$

b) $15 = 20 \cdot \frac{\pi}{180} \cdot r = 42.97 in$

3) $AS = 900 rpm \cdot 2\pi$

$= 1800 \pi \, rad/min$

$LS = 1800 \pi \, rad/min \cdot 10 cm$

$= 18000 \pi \, rad/min$

$= 5654.77 \, cm/min \quad \frac{1 \, min}{60 \, sec} \quad \frac{1 \, m}{100 \, cm} = 9.4 \, m/sec$

4) $AS = \frac{1 \, rev}{25 sec} \cdot 2\pi$

$= \frac{2\pi}{25} \, rad/sec = .25$

$LS = \frac{2\pi}{25} \, rad/sec \cdot 104 ft$

$= 26.14 \, ft/sec \cdot \frac{60 \, sec}{1 \, m}$

$= 1568.28 \, ft/min$

5) a) $AS = 4 rpm \cdot 2\pi$

$= 8\pi \, rad/sec = 25.13$

b) $LS = AS \cdot radius$

$= 339.29 \, in/sec$

$\rightarrow 117333.\overline{3} - 2\pi x$

$15674.08 \quad rev/hr \cdot \frac{1 \, hr}{3600 sec}$

$5.19 \, rev/sec$

6) $25 \, mph = 13.5 in \, 2\pi x$