Convert the angle to a decimal in degrees. Round the answer to two decimal places.

1) 23°47'37"   1) _____

Convert the angle to D° M' S" form. Round the answer to the nearest second.

2) 81.96°   2) _____

Convert the angle in degrees to radians. Express the answer as multiple of π.

3) 105°   3) _____

Convert the angle in degrees to radians. Express the answer in decimal form. If necessary, round to two decimal places.

4) –137°   4) _____

Convert the angle in radians to degrees.
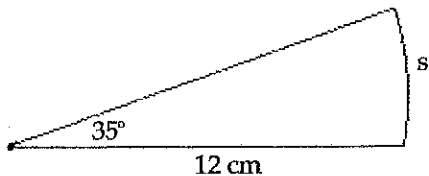
5) $\dfrac{9\pi}{10}$ 5) _____

Convert the angle in radians to degrees. Express the answer in decimal form. If necessary, round to two decimal places.

6) 5   6) _____

Find the length s. Round the answer to three decimal places.

7)   7) _____

35°   12 cm

If s denotes the length of the arc of a circle of radius r subtended by a central angle θ, find the missing quantity.

8) $r = \dfrac{2}{3}$ feet, s = 10 feet, θ = ?   8) _____

If A denotes the area of the sector of a circle of radius r formed by the central angle θ, find the missing quantity. If necessary, round the answer to two decimal places.

9) r = 13 inches, θ = 5 radians, A = ?   9) _____

Solve the problem.

10) A ship in the Atlantic Ocean measures its position to be 30°36' north latitude. Another ship is reported to be due north of the first ship at 39°20' north latitude. Approximately how far apart are the two ships? Round to the nearest mile. Assume that the radius of the Earth is 3960 miles.   10) _____

11) A circle has a radius of 4 centimeters. Find the area of the sector of the circle formed by an angle of 25°. If necessary, round the answer to two decimal places.   11) _____

12) An object is traveling around a circle with a radius of 10 centimeters. If in 20 seconds a central angle of $\frac{1}{3}$ radian is swept out, what is the linear speed of the object?

12) ___✗___

Find the exact value. Do not use a calculator.

13) $\cos\frac{\pi}{2}$

13) _____

14) $\cot 2\pi$

14) _____

15) $\sec(-\pi)$

15) _____

16) $\tan 45°$

16) _____

17) $\csc\frac{\pi}{6}$

17) _____

18) $\tan(25\pi)$

18) _____

19) $\sin 405°$

19) _____

20) $\cot 930°$

20) _____

21) $\cos\frac{10\pi}{3}$

21) _____

22) $\sec\frac{19\pi}{4}$

22) _____

Find the exact value of the expression. Do not use a calculator.

23) $\sec 60° - \cos 30°$

23) _____

Use the even–odd properties to find the exact value of the expression. Do not use a calculator.

24) $\sin\left(-\frac{\pi}{4}\right)$

24) _____

25) $\cos(-60°)$

25) _____

Use a calculator to find the approximate value of the expression rounded to two decimal places.

26) $\tan 78°$

26) _____

27) $\csc 31°$

27) _____

28) $\cot 0.1845$

28) _____

Name the quadrant in which the angle θ lies.

29) $\tan \theta < 0,$ $\sin \theta < 0$

29) _____

30) $\cos \theta < 0,$ $\csc \theta < 0$

30) _____

Use the properties of the trigonometric functions to find the exact value of the expression. Do not use a calculator.

31) $\tan 70° - \dfrac{\sin 70°}{\cos 70°}$

31) _____

32) $\sec^2 80° - \tan^2 80°$

32) _____

A point on the terminal side of an angle θ is given. Find the exact value of the six trigonometric function of θ.

33) $(4, -5)$

_____
_____
_____
_____
_____
_____

In the problem, sin θ and cos θ are given. Find the exact value of the remaining trigonometric function.

34) $\sin \theta = \dfrac{1}{4}, \cos \theta = \dfrac{\sqrt{15}}{4}$

_____
_____
_____
_____

Find the exact value of the remaining trigonometric function of θ.

35) $\cos \theta = \dfrac{2}{9}, \quad \tan \theta < 0$

_____
_____
_____
_____
_____

3

1) 23.79°
2) 81°57'36"
3) $\dfrac{7\pi}{12}$
4) −2.39
5) 162°
6) 286.48°
7) 7.33 cm
8) 15 radians
9) 422.5 in^2
10) 604 mi
11) 3.49 cm^2
12) $\dfrac{1}{6}$ cm/sec
13) 0
14) undefined
15) −1
16) 1
17) 2
18) 0
19) $\dfrac{\sqrt{2}}{2}$
20) $\sqrt{3}$
21) $-\dfrac{1}{2}$
22) $-\sqrt{2}$
23) $\dfrac{4-\sqrt{3}}{2}$
24) $-\dfrac{\sqrt{2}}{2}$
25) $\dfrac{1}{2}$
26) 4.70
27) 1.94
28) 5.36
29) IV
30) III
31) 0
32) 1

33) $\sin\theta = -\dfrac{5\sqrt{41}}{41}$ $\csc\theta = -\dfrac{\sqrt{41}}{5}$

$\cos\theta = \dfrac{4\sqrt{41}}{41}$ $\sec\theta = \dfrac{\sqrt{41}}{4}$

$\tan\theta = -\dfrac{5}{4}$ $\cot\theta = -\dfrac{4}{5}$

34) $\tan\theta = \dfrac{\sqrt{15}}{15}$ $\csc\theta = 4$

$\cot\theta = \sqrt{15}$ $\sec\theta = \dfrac{4\sqrt{15}}{15}$

35) $\sin\theta = -\dfrac{\sqrt{77}}{9}$ $\csc\theta = -\dfrac{9\sqrt{77}}{77}$

$\tan\theta = -\dfrac{\sqrt{77}}{2}$ $\sec\theta = \dfrac{9}{2}$

$\cot\theta = -\dfrac{2\sqrt{77}}{77}$