

name:

USE $s = r\theta$ for problems # 1-5

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

1) $r = 12.05$ centimeters, $\theta = 4$ radians, $s = ?$

A) 49.2 cm

B) 50.2 cm

C) 48.2 cm

D) 47.2 cm

2) $r = \frac{2}{3}$ feet, $s = 10$ feet, $\theta = ?$

A) $\frac{20}{3}$ radians

B) 15°

C) 15 radians

D) $\frac{20}{3}^\circ$

3) $s = 4.62$ meters, $\theta = 1.4$ radians, $r = ?$

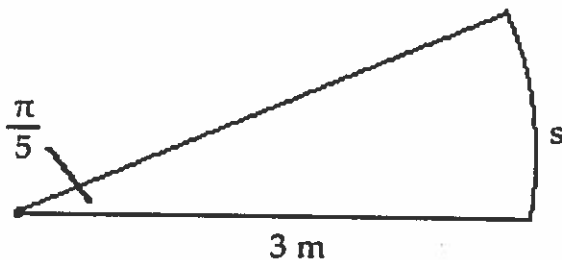
A) 3.3 m

B) 1.65 m

C) 2.9 m

D) 0.3 m

4)



A) 4.775 m

B) 5.236 m

C) 1.885 m

D) 3.77 m

5.

Convert the angle in radians to degrees.

$\frac{8\pi}{5}$

A) 290°

B) 288°

C) 289°

D) 287°

6.

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

105°

A) $\frac{8\pi}{13}$

B) $\frac{6\pi}{11}$

C) $\frac{12\pi}{7}$

D) $\frac{7\pi}{12}$

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.

$$A = \frac{1}{2} r^2 \theta$$

7.

$r = 14$ feet, $A = 61$ square feet, $\theta = ?$

A) 0.31 radians

B) 5978 radians

C) 0.62 radians

D) 11,956 radians

8.

$\theta = \frac{\pi}{3}$ radians, $A = 58$ square meters, $r = ?$

A) 5.51 m

B) 10.52 m

C) 121.47 m

D) 30.37 m

9.

$r = 13$ inches, $\theta = 5$ radians, $A = ?$

A) 65 in²

B) 422.5 in²

C) 32.5 in²

D) 845 in²

Find the exact value. Do not use a calculator.

10.

$\sin 0$

A) $\frac{\sqrt{2}}{2}$

B) 1

C) 0

D) undefined

11.

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

A) 0

B) -1

C) 1

D) undefined

12.

$\sin \pi$

A) 1

B) -1

C) 0

D) undefined

13.

$\cos \pi$

A) 0

B) 1

C) -1

D) undefined

14.

$$\tan \frac{\pi}{4}$$

A) $\frac{\sqrt{3}}{3}$

B) 1

C) 0

D) -1

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

15.

$$\sin 40^\circ$$

A) 0.75

B) 0.84

C) 0.55

D) 0.64

16.

$$\csc 31^\circ$$

A) -2.48

B) 2.00

C) 1.94

D) -2.42

17.

$$\cot 0.1845$$

A) 1.02

B) 0.19

C) 0.98

D) 5.36

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

18.

$$(-5, -12)$$

Find $\sin \theta$.

A) $\frac{12}{13}$

B) $\frac{5}{13}$

C) $-\frac{12}{13}$

D) $-\frac{5}{13}$

19.

$$\left(-\frac{1}{2}, \frac{1}{5}\right)$$

Find $\cos \theta$.

A) $\frac{2\sqrt{29}}{29}$

B) $-\frac{5\sqrt{29}}{29}$

C) $\frac{29}{5}$

D) $-\frac{29}{2}$

Solve the problem.

20.

If $\sin \theta = \frac{1}{4}$, find $\csc \theta$.

A) $\frac{3}{4}$

B) $-\frac{1}{4}$

C) 4

D) undefined

Find the exact value. Do not use a calculator.

21.

$\cos \frac{3\pi}{2}$

A) 1

B) 0

C) -1

D) undefined

22.

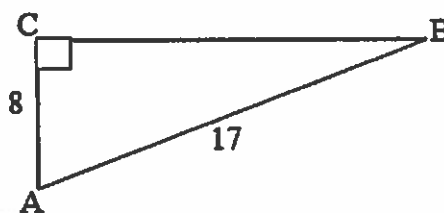
Find the value of $\csc A$.

A. $\frac{8}{17}$

B. $\frac{17}{15}$

C. $\frac{17}{8}$

D. $\frac{15}{17}$



23.

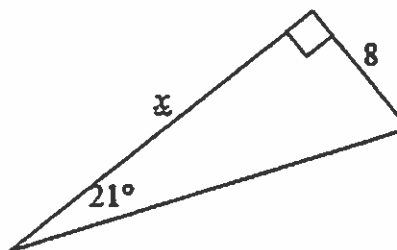
Which equation can be used to find x ?

A. $\sin 21^\circ = \frac{8}{x}$

B. $\tan 21^\circ = \frac{x}{8}$

C. $\tan 21^\circ = \frac{8}{x}$

D. $\sin 21^\circ = \frac{x}{8}$



24.

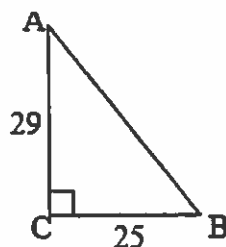
Find A to the nearest degree.

A. 49°

B. 37°

C. 41°

D. 53°



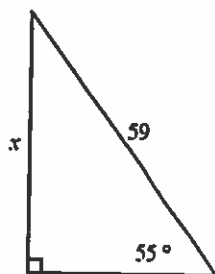
25.

Find the exact value of $\sin \theta$ if the terminal side of θ in standard position contains the point $(-4, -3)$.

- A. $-\frac{4}{5}$ B. $-\frac{3}{5}$ C. $\frac{3}{5}$ D. $\frac{4}{5}$

26.

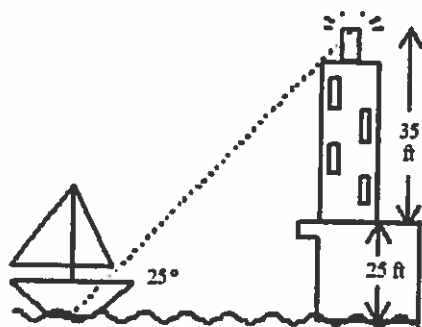
Find the length of x .



- a. 33.8 b. 48.3 c. 84.3 d. 72.0

27.

The line of sight from a small boat to the light at the top of a 35-foot lighthouse built on a cliff 25 feet above the water makes a 25° angle with the water. To the nearest foot, how far is the boat from the cliff?

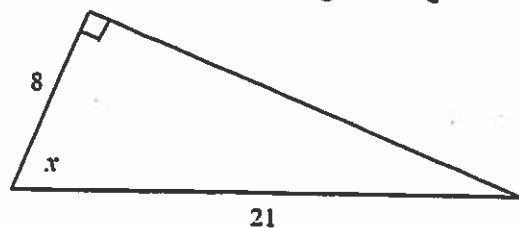


Drawing is not to scale.

- a. 141 feet b. 128 feet c. 27 feet d. 75 feet

28.

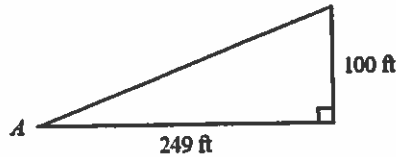
Find the measure of x in the right triangle.



- a. 22.4° b. 67.6° c. 20.9° d. 69.1°

29.

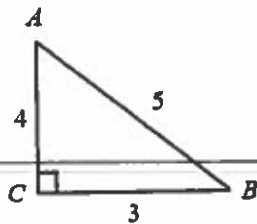
A large totem pole in the state of Washington is 100 feet tall. At a particular time of day, the totem pole casts a 249-foot-long shadow. Find the measure of $\angle A$ to the nearest degree.



- a. 68° b. 45° c. 35° d. 22°

30.

Write the ratios for $\sin A$ and $\cos A$.



Not drawn to scale

- a. $\sin A = \frac{3}{5}, \cos A = \frac{4}{5}$ c. $\sin A = \frac{3}{4}, \cos A = \frac{4}{5}$
 b. $\sin A = \frac{4}{5}, \cos A = \frac{3}{5}$ d. $\sin A = \frac{3}{5}, \cos A = \frac{4}{3}$

31.

What is the value of $\sin 43^\circ$ to the nearest ten-thousandth?

- a. 0.9325 c. 1.4663
 b. 0.7314 d. 0.682

32.

Find the exact value of $\sin 120^\circ$.

- a. $\sin = \frac{\sqrt{3}}{2}$ c. $\sin = \frac{1}{2}$
 b. $\sin = -\frac{\sqrt{3}}{2}$ d. $\sin = -\frac{1}{2}$

33.

Find the exact value of $\sin\left(-\frac{4\pi}{3}\right)$ radians.

- a. $\frac{1}{2}$ b. $\sqrt{3}$ c. 1 d. $\frac{\sqrt{3}}{2}$

34.

Find the exact value of $\cos\left(-\frac{7\pi}{4}\right)$ radians.

- a. $\frac{\sqrt{2}}{2}$ b. $\frac{1}{2}$ c. $\frac{\sqrt{3}}{2}$ d. $-\frac{1}{2}$

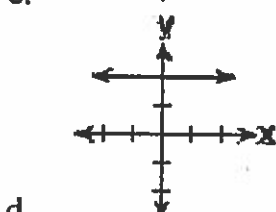
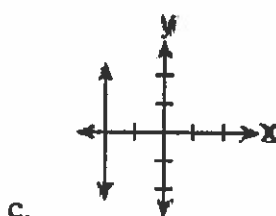
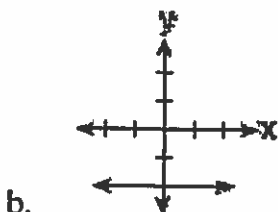
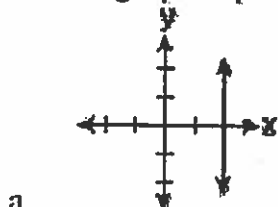
35.

Is $\cos 314^\circ$ positive, negative, or zero?

- a. Positive b. Negative c. Zero

36.

Which graph represents the equation $x = -2$?



37.

If a line is horizontal, its slope is

- a. 1
b. 0
c. undefined
d. negative

38.

What is an equation of the line that passes through the point $(3, -1)$ and has a slope of 2?

- a. $y = 2x + 5$
b. $y = 2x - 1$
c. $y = 2x - 4$
d. $y = 2x - 7$

39.

What is the slope of the line that passes through the points $(-6, 1)$ and $(4, -4)$?

- a. -2
- b. 2
- c. $-\frac{1}{2}$
- d. $\frac{1}{2}$

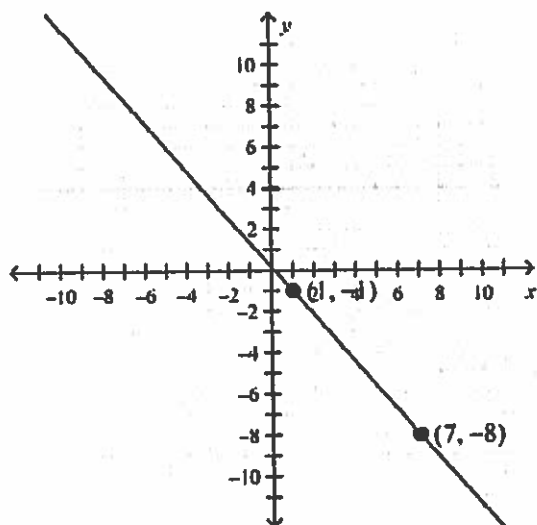
40.

If a line is vertical, its slope is

- a. 1
- b. 0
- c. undefined
- d. negative

41.

The graph shows a linear relationship. Find the slope.



- a. $-\frac{8}{9}$
- b. $-\frac{7}{6}$

- c. $-\frac{6}{7}$
- d. $-\frac{9}{8}$

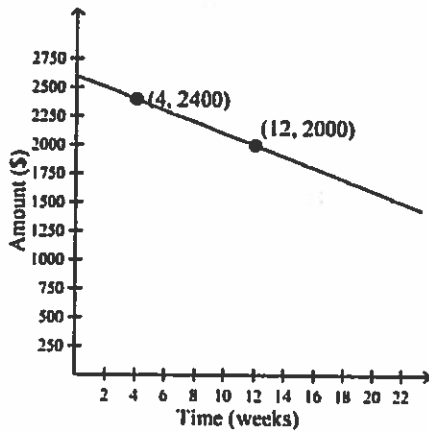
42.

Find the slope of the line described by $x - 3y = -6$.

- a. $\frac{1}{3}$
- b. -3
- c. $-\frac{1}{3}$
- d. 3

44.

Tara creates a budget for her weekly expenses. The graph shows how much money is in the account at different times. Find the slope of the line. Then tell what rate the slope represents.



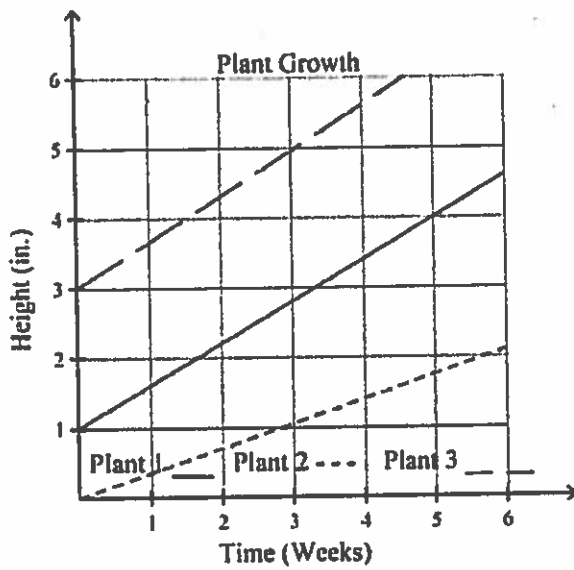
- a. The slope is -50 . The slope means that the amount of money in the account is decreasing at a rate of \$50 every week.
- b. The slope is 50 . The slope means that the amount of money in the account is increasing at a rate of \$50 every week.
- c. The slope is -0.02 . The slope means that the amount of money in the account is decreasing at a rate of \$0.02 every week.
- d. The slope is -50 . The slope means that the amount of money in the account is decreasing at a rate of \$50 every 2 weeks.

45.

A student finds the slope of the line between $(14, 1)$ and $(18, 17)$. She writes $\frac{1-17}{18-14}$. What mistake did she make?

- a. She should have added the values, not subtracted them.
- b. She used y -values where she should have used x -values.
- c. She mixed up the x - and y -values.
- d. She did not keep the order of the points the same in numerator and the denominator.

46.

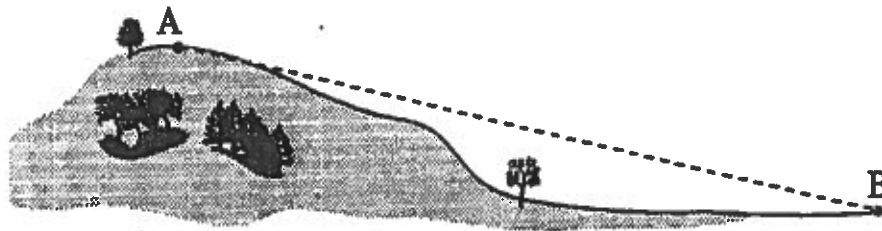


Use the graph.

- Which plant was the tallest at the beginning?
 - Which plant had the greatest rate of change over the 6 weeks?
- plant 2; plant 2
 - plant 1; plant 3
 - plant 3; plant 1
 - plant 3; plant 3

47.

In the Laurentian wildlife reserve, a sign indicates a gradient (slope) of 14 % between places A and B.



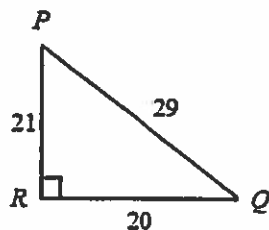
In the Cartesian plane, point A would have co-ordinates (28, 49) and point B would have co-ordinates (228, y).

Rounded to the nearest whole number, what is the value of y ?

- 94
- 77
- 21
- 1380

48.

Write the tangent ratios for $\angle P$ and $\angle Q$.



Not drawn to scale

a. $\tan P = \frac{29}{21}$; $\tan Q = \frac{21}{29}$

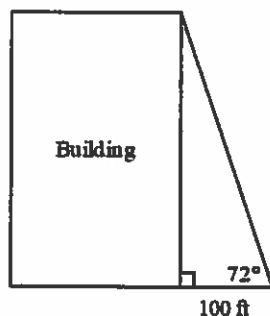
b. $\tan P = \frac{20}{21}$; $\tan Q = \frac{21}{20}$

c. $\tan P = \frac{21}{20}$; $\tan Q = \frac{20}{21}$

d. $\tan P = \frac{29}{20}$; $\tan Q = \frac{20}{29}$

49.

The students in Mr. Collin's class used a surveyor's measuring device to find the angle from their location to the top of a building. They also measured their distance from the bottom of the building. The diagram shows the angle measure and the distance. To the nearest foot, find the height of the building.



a. 2400 ft

b. 72 ft

c. 308 ft

d. 33 ft

50.

A tree casts a shadow of 26 meters when the angle of elevation of the sun is 24° . Find the height of the tree to the nearest meter.

a. 13 m

c. 10 m

b. 11 m

d. 12 m

