Solve △*XYZ* by using the given measurements. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.
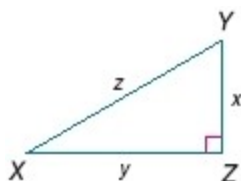
1. $Y = 65°, x = 16$

ANSWER:
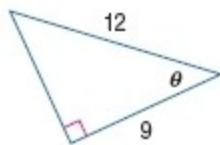$X = 25°, y = 34.3, z = 37.9$

2. $X = 25°, x = 8$

ANSWER:
$Y = 65°, y = 17.2, z = 18.9$

3. Find the values of the six trigonometric functions for angle θ.

ANSWER:
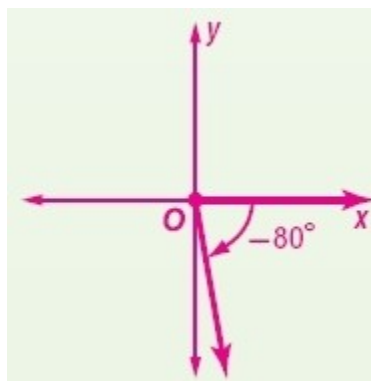
$\sin\theta = \dfrac{\sqrt{7}}{4}, \cos\theta = \dfrac{3}{4},$

$\tan\theta = \dfrac{\sqrt{7}}{3}, \csc\theta = \dfrac{4\sqrt{7}}{7},$

$\sec\theta = \dfrac{4}{3}, \cot\theta = \dfrac{3\sqrt{7}}{7}$

4. Draw an angle measuring −80° in standard position.

ANSWER:

Rewrite each degree measure in radians and each radian measure in degrees.

5. 215°

ANSWER:
$\dfrac{43\pi}{36}$

6. −350°

ANSWER:
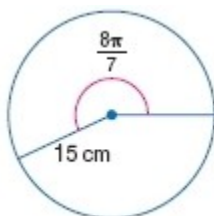$-\dfrac{35\pi}{18}$

7. $\dfrac{8\pi}{5}$

ANSWER:
288°

8. $\dfrac{9\pi}{2}$

ANSWER:
810°

9. **MULTIPLE CHOICE** What is the length of the arc below rounded to the nearest tenth?

A 4.2 cm

B 17.1 cm

C 53.9 cm

D 2638.9 cm

ANSWER:
C

Find the exact value of each trigonometric function.

10. tan π

ANSWER:
0

11. $\cos\dfrac{3\pi}{4}$

ANSWER:
$-\dfrac{\sqrt{2}}{2}$

The terminal side of θ in standard position contains each point. Find the exact values of the six trigonometric functions of θ.

12. $(0, -5)$

ANSWER:
$\sin\theta = -1$, $\cos\theta = 0$, $\tan\theta = $ undefined, $\csc\theta = -1$, $\sec\theta = $ undefined, $\cot\theta = 0$

13. $(6, 8)$

ANSWER:
$\sin\theta = \dfrac{4}{5}, \cos\theta = \dfrac{3}{5}, \tan\theta = \dfrac{4}{3},$
$\csc\theta = \dfrac{5}{4}, \sec\theta = \dfrac{5}{3}, \cot\theta = \dfrac{3}{4}$

14. **MULTIPLE CHOICE** Suppose θ is an angle in standard position with $\cos\theta > 0$. In which quadrant (s) does the terminal side of θ lie?
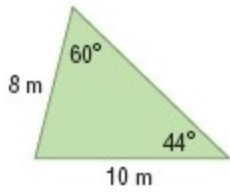
F I

G II

H III

J I and IV

ANSWER:
J

15. **GARDEN** Lana has a garden in the shape of a triangle as pictured below. She wants to fill the garden with top soil. What is the area of the triangle?

ANSWER:
about 38.8 m^2

Determine whether each triangle has *no* solution, *one* solution, or *two* solutions. Then solve the triangle. Round side lengths to the nearest tenth and angle measures the nearest degree.

16. $A = 38°$, $a = 18$, $c = 25$

ANSWER:
two solutions: $C= 59°$, $B = 83°$, $b= 29.0$ or $C = 121°$, $B = 21°$, $b = 10.5$

17. $A = 65°$, $a = 5$, $b = 7$

ANSWER:
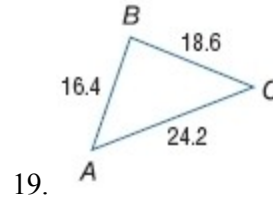no solution

18. $A = 115°$, $a = 12$, $b = 8$

ANSWER:
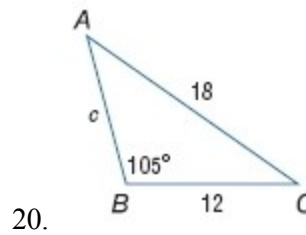one solution: $B = 37°$, $C = 28°$, $c = 6.2$

Solve each triangle. Round side lengths to the nearest tenth and angle measures to the nearest degree.
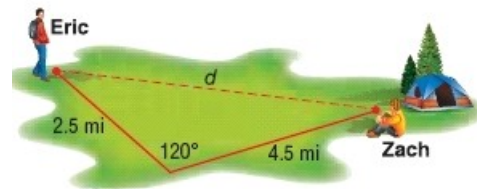

19.

ANSWER:
$A = 50°$, $B = 87°$, $C = 43°$

20.

ANSWER:
$A = 40°$, $C = 35°$, $c = 10.7$

21. Eric and Zach are camping. Erik leaves Zach at the campsite and walks 4.5 miles. He then turns at a 120°angle and walks another 2.5 miles. If Eric were to walk directly back to Zach, how far would he walk?

ANSWER:
about 6.1 miles