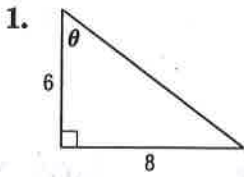


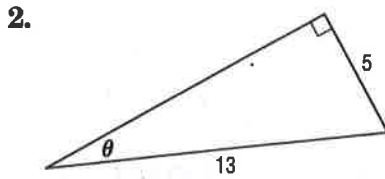
13-1 Skills Practice

Right Triangle Trigonometry

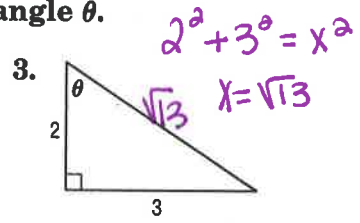
Find the values of the six trigonometric functions for angle θ .



$\sin \theta = \frac{4}{5}$ $\cos \theta = \frac{3}{5}$
 $\tan \theta = \frac{4}{3}$ $\csc \theta = \frac{5}{4}$
 $\sec \theta = \frac{5}{3}$ $\cot \theta = \frac{3}{4}$

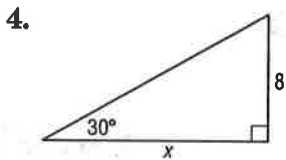


$\sin \theta = \frac{5}{13}$ $\cos \theta = \frac{12}{13}$
 $\tan \theta = \frac{5}{12}$ $\csc \theta = \frac{13}{5}$
 $\sec \theta = \frac{13}{12}$ $\cot \theta = \frac{12}{5}$

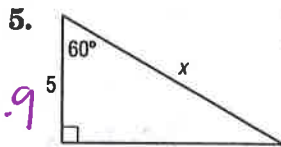


$\sin \theta = \frac{2\sqrt{13}}{13}$ $\cos \theta = \frac{3\sqrt{13}}{13}$
 $\tan \theta = \frac{2}{3}$ $\csc \theta = \frac{\sqrt{13}}{2}$
 $\sec \theta = \frac{\sqrt{13}}{3}$ $\cot \theta = \frac{3}{2}$

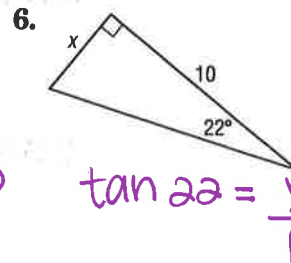
Write an equation involving \sin , \cos , or \tan that can be used to find x . Then solve the equation. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.



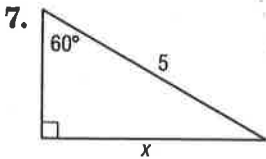
$\tan 30 = \frac{8}{x}$



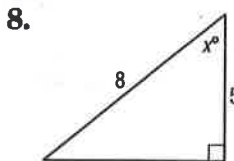
$\cos 60 = \frac{5}{x}$, $x = 10$



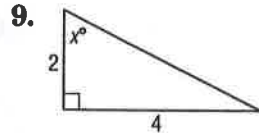
$\tan 22 = \frac{x}{10}$



$\sin 60 = \frac{x}{5}$ $x \approx 4.3$



$\cos x = \frac{5}{8}$ $x \approx 51$



$\tan x = \frac{4}{2}$ $x \approx 63$

Solve $\triangle ABC$ by using the given measurements. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.

10. $A = 72^\circ$, $c = 10$

$a \approx 9.5$ $b \approx 3.1$ $B = 18^\circ$

11. $B = 20^\circ$, $b = 15$

$a \approx 41.2$ $c \approx 43.9$ $A = 70^\circ$

12. $A = 80^\circ$, $a = 9$

$b \approx 1.6$ $c \approx 9.1$ $B = 10$

13. $A = 58^\circ$, $b = 12$

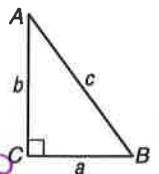
$a \approx 19.2$ $c \approx 22.6$ $B = 32$

14. $b = 4$, $c = 9$

$a \approx 8.1$ $A \approx 64$ $B \approx 26$

15. $a = 7$, $b = 5$

$c \approx 8.6$ $A \approx 54$
 $B \approx 36$

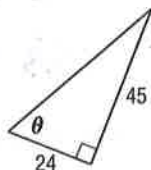


13-1 Practice

Right Triangle Trigonometry

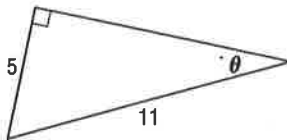
Find the values of the six trigonometric functions for angle θ .

1.



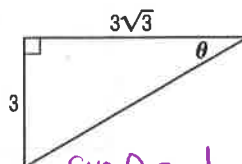
$$\begin{aligned} \sin \theta &= \frac{15}{17} & \cos \theta &= \frac{8}{17} \\ \tan \theta &= \frac{15}{8} & \csc \theta &= \frac{17}{15} \\ \sec \theta &= \frac{17}{8} & \cot \theta &= \frac{8}{15} \end{aligned}$$

2.



$$\begin{aligned} \sin \theta &= \frac{5}{11} & \cos \theta &= \frac{4\sqrt{6}}{11} \\ \tan \theta &= \frac{5\sqrt{6}}{24} & \csc \theta &= \frac{11}{5} \\ \sec \theta &= \frac{11\sqrt{6}}{24} & \cot \theta &= \frac{4\sqrt{6}}{5} \end{aligned}$$

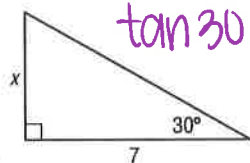
3.



$$\begin{aligned} \sin \theta &= \frac{1}{2} & \cos \theta &= \frac{\sqrt{3}}{2} \\ \tan \theta &= \frac{\sqrt{3}}{3} & \csc \theta &= 2 \\ \sec \theta &= \frac{2\sqrt{3}}{3} & \cot \theta &= \sqrt{3} \end{aligned}$$

Write an equation involving \sin , \cos , or \tan that can be used to find x . Then solve the equation. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.

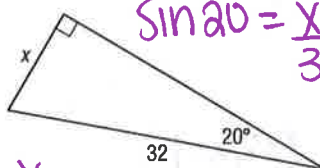
4.



$$\tan 30 = \frac{x}{7}$$

$$x \approx 4.0$$

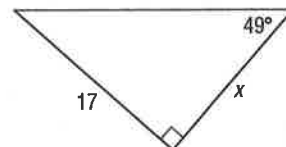
5.



$$\sin 20 = \frac{x}{32}$$

$$x \approx 10.9$$

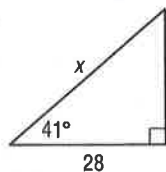
6.



$$\tan 49 = \frac{17}{x}$$

$$x \approx 14.8$$

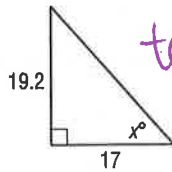
7.



$$\cos 41 = \frac{28}{x}$$

$$x \approx 37.1$$

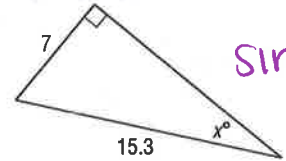
8.



$$\tan x = \frac{19.2}{17}$$

$$x \approx 48$$

9.



$$\sin x = \frac{7}{15.3}$$

$$x \approx 27$$

Solve $\triangle ABC$ by using the given measurements. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.

10. $A = 35^\circ, a = 12$

$$b \approx 17.1 \quad c \approx 20.9 \quad B = 55^\circ$$

11. $B = 71^\circ, b = 25$

$$a \approx 8.6 \quad c \approx 26.4 \quad A = 19^\circ$$

12. $B = 36^\circ, c = 8$

$$a \approx 6.5 \quad b \approx 4.7 \quad A = 54^\circ$$

13. $a = 4, b = 7$

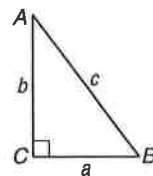
$$c \approx 8.1 \quad A \approx 30^\circ \quad B \approx 60^\circ$$

14. $A = 17^\circ, c = 3.2$

$$a \approx 0.9 \quad b \approx 3.1 \quad B = 73^\circ$$

15. $b = 52, c = 95$

$$a \approx 79.5 \quad A \approx 33^\circ \quad B \approx 57^\circ$$



16. **SURVEYING** John stands 150 meters from a water tower and sights the top at an angle of elevation of 36° . How tall is the tower? Round to the nearest meter.

109 m.