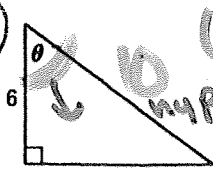
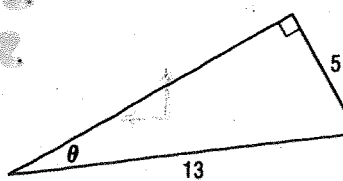


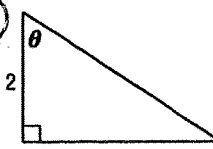
# 13-1 Skills Practice

## Right Triangle Trigonometry

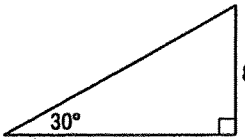
Find the values of the six trigonometric functions for angle  $\theta$ .

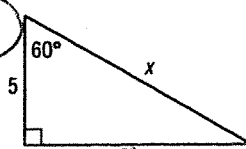
1.    
 $\sin \theta = \frac{4}{5}$ ,  $\cos \theta = \frac{3}{5}$ ,  $\tan \theta = \frac{4}{3}$ ,  $\csc \theta = \frac{5}{4}$ ,  $\sec \theta = \frac{5}{3}$ ,  $\cot \theta = \frac{3}{4}$

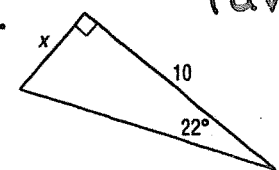
2.    
 $\sin \theta = \frac{5}{13}$ ,  $\cos \theta = \frac{12}{13}$ ,  $\tan \theta = \frac{5}{12}$ ,  $\csc \theta = \frac{13}{5}$ ,  $\sec \theta = \frac{13}{12}$ ,  $\cot \theta = \frac{12}{5}$

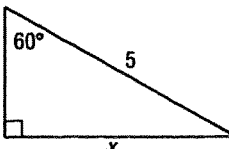
3.    
 $\sin \theta = \frac{3\sqrt{13}}{13}$ ,  $\cos \theta = \frac{2\sqrt{13}}{13}$ ,  $\tan \theta = \frac{3}{2}$ ,  $\csc \theta = \frac{\sqrt{13}}{3}$ ,  $\sec \theta = \frac{\sqrt{13}}{2}$ ,  $\cot \theta = \frac{2}{3}$

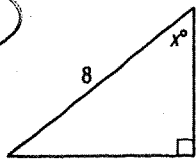
Write an equation involving sin, cos, or tan that can be used to find  $x$ . Then solve the equation. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.

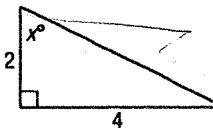
4.    
 $\tan 30^\circ = \frac{8}{x}$ ,  $x \approx 13.9$

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

6.    
 $\tan 22^\circ = \frac{x}{10}$ ,  $x = 4$

7.    
 $\sin 60^\circ = \frac{x}{5}$ ,  $x = 4.3$

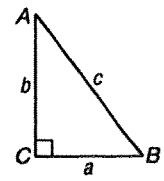
8.    
 $\cos x^\circ = \frac{5}{8}$ ,  $x \approx 51$

9.    
 $\tan x^\circ = \frac{2}{4}$ ,  $x = 63$

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.  $A = 72^\circ$ ,  $c = 10$ ,  $B = 18^\circ$ ,  $a \approx 9.5$ ,  $b \approx 3.1$

11.  $B = 20^\circ$ ,  $b = 15$ ,  $a \approx 41.2$ ,  $c \approx 43.9$ ,  $A = 70^\circ$

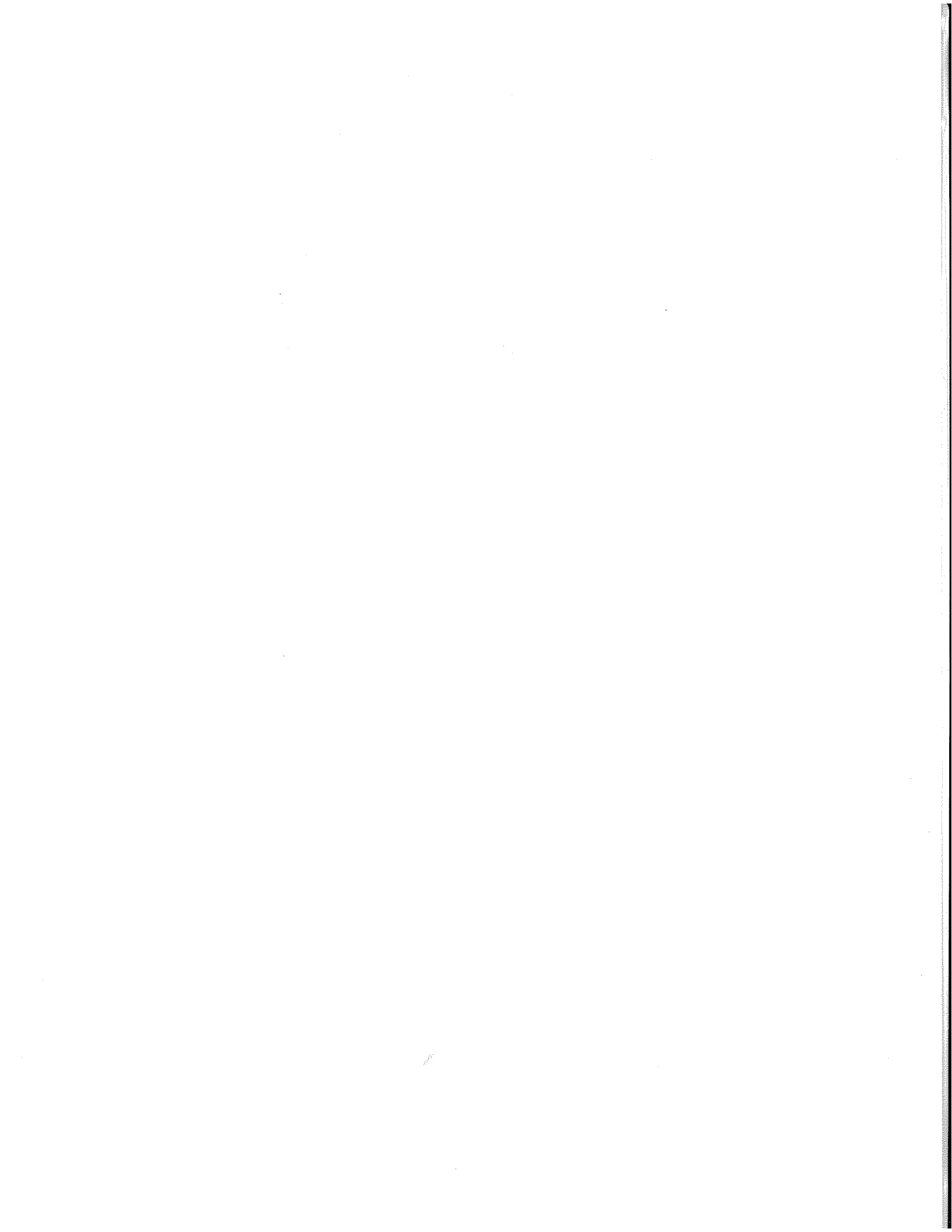


12.  $A = 80^\circ$ ,  $a = 9$ ,  $b \approx 1.6$ ,  $c \approx 9.1$ ,  $B = 10^\circ$

13.  $A = 58^\circ$ ,  $b = 12$ ,  $a \approx 19.2$ ,  $c \approx 22.6$ ,  $B = 32^\circ$

14.  $b = 4$ ,  $c = 9$ ,  $a \approx 8.1$ ,  $A \approx 64^\circ$ ,  $B \approx 26^\circ$

15.  $a = 7$ ,  $b = 5$ ,  $c \approx 8.6$ ,  $A \approx 54^\circ$ ,  $B \approx 36^\circ$



# 13-3 Skills Practice

## Trigonometric Functions of General Angles

Find the exact values of the six trigonometric functions of  $\theta$  if the terminal side of  $\theta$  in standard position contains the given point.

1. (5, 12) 2. (3, 4)

$$\sin \theta = \frac{12}{13}, \cos \theta = \frac{5}{13}, \tan \theta = \frac{12}{5},$$

$$\csc \theta = \frac{13}{12}, \sec \theta = \frac{13}{5}, \cot \theta = \frac{5}{12}$$

3. (8, -15)

4. (-4, 3)

$$\sin \theta = \frac{3}{5}, \cos \theta = -\frac{4}{5}, \tan \theta = -\frac{3}{4},$$

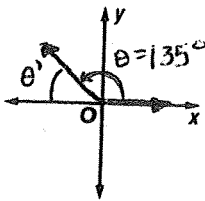
$$\csc \theta = \frac{5}{3}, \sec \theta = -\frac{5}{4}, \cot \theta = -\frac{4}{3}.$$

5. (-9, -40)

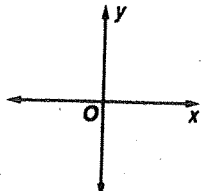
6. (1, 2)

Sketch each angle. Then find its reference angle.

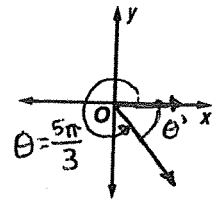
7.  $135^\circ$   $45^\circ$



8.  $200^\circ$



9.  $\frac{5\pi}{3}$   $\frac{\pi}{3}$



Find the exact value of each trigonometric function.

10.  $\sin 150^\circ = \frac{1}{2}$

11.  $\cos 270^\circ$

12.  $\cot 135^\circ = -1$

13.  $\tan(-30^\circ)$

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

15.  $\cos \frac{4\pi}{3} = -\frac{1}{2}$

16.  $\cot(-\pi)$

17.  $\sin\left(-\frac{3\pi}{4}\right)$

Suppose  $\theta$  is an angle in standard position whose terminal side is in the given quadrant. For each function, find the exact values of the remaining five trigonometric functions of  $\theta$ .

18.  $\sin \theta = \frac{4}{5}$ , Quadrant II

$$\cos \theta = -\frac{3}{5}, \tan \theta = -\frac{4}{3},$$

19.  $\tan \theta = -\frac{12}{5}$ , Quadrant IV

$$\csc \theta = \frac{5}{4}, \sec \theta = -\frac{5}{3}, \cot \theta = -\frac{3}{4}$$

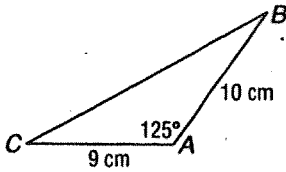
Lesson 13-3

# 13-4 Skills Practice

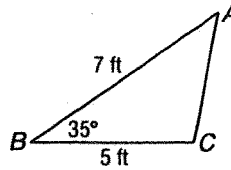
## Law of Sines

Find the area of  $\triangle ABC$  to the nearest tenth.

1.



2.



10.0 ft<sup>2</sup>

3.  $A = 35^\circ, b = 3 \text{ ft}, c = 7 \text{ ft}$

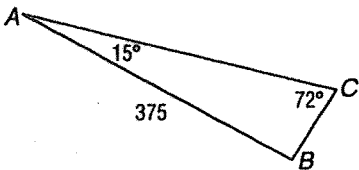
4.  $C = 148^\circ, a = 10 \text{ cm}, b = 7 \text{ cm}$

5.  $C = 22^\circ, a = 14 \text{ m}, b = 8 \text{ m}$

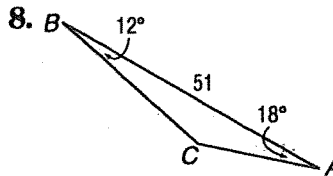
6.  $B = 93^\circ, c = 18 \text{ mi}, a = 42 \text{ mi}$  377.5 mi<sup>2</sup>

Solve each triangle. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.

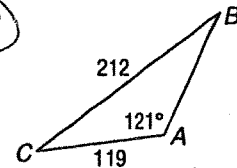
7.



8.

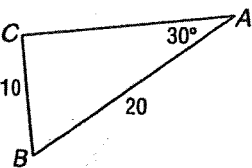


9.

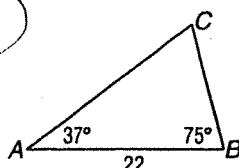


$B \approx 29^\circ, C \approx 30^\circ,$   
 $c \approx 124.6.$

10.

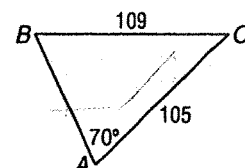


11.



$C = 68^\circ, a \approx 14.3$   
 $b \approx 22.9$

12.



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

13.  $A = 30^\circ, a = 1, b = 4$   
no solution

14.  $A = 30^\circ, a = 2, b = 4$

15.  $A = 30^\circ, a = 3, b = 4$  2 sol.  
 $B = 42^\circ, C = 108^\circ, c = 5.17$   
 $B = 138^\circ, C = 12^\circ, c = 1.2$

16.  $A = 38^\circ, a = 10, b = 9$  one solution,  
 $B \approx 34^\circ, C \approx 108^\circ, c \approx 15.4$

17.  $A = 78^\circ, a = 8, b = 5$

18.  $A = 133^\circ, a = 9, b = 7$

19.  $A = 127^\circ, a = 2, b = 6$

20.  $A = 109^\circ, a = 24, b = 13$  one solution,  
 $B \approx 31^\circ, C \approx 40^\circ, c \approx 16.4$