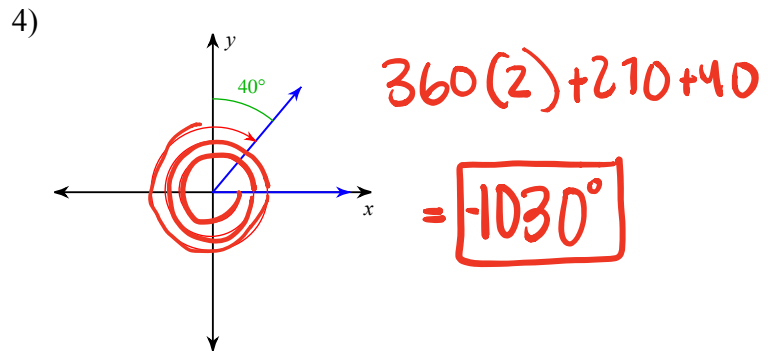
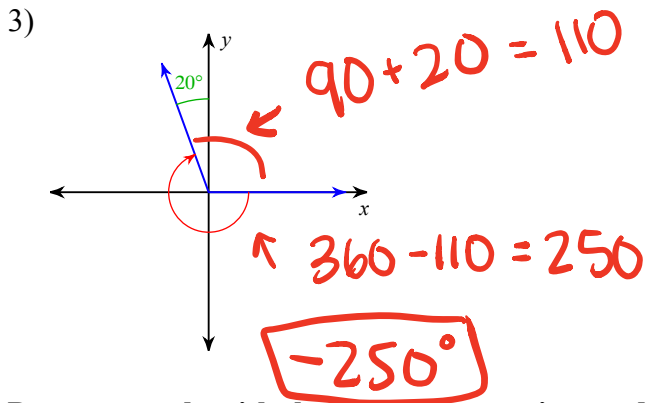
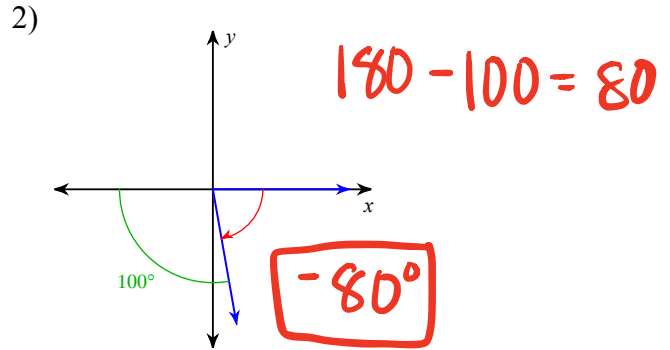
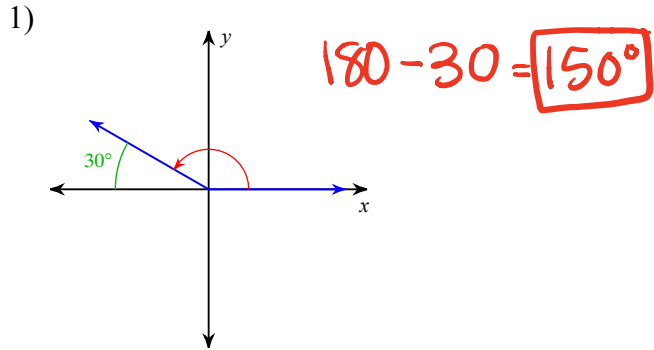


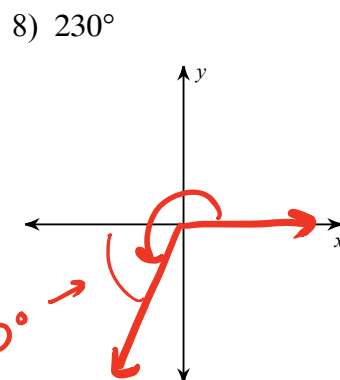
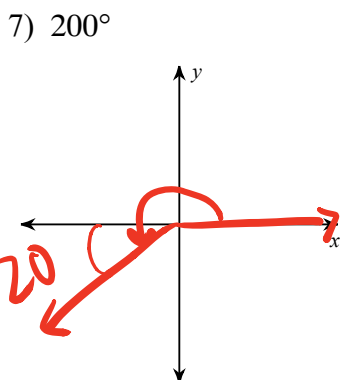
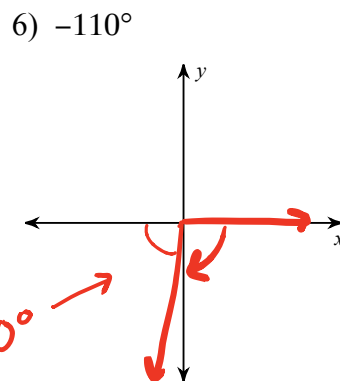
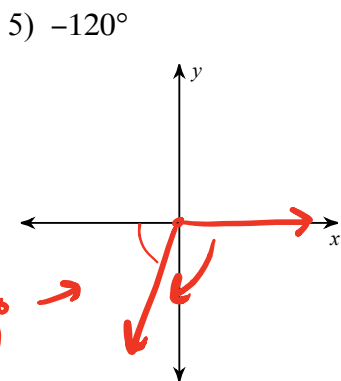
Unit 9 Review

9.2

Find the measure of each angle.



Draw an angle with the given measure in standard position.



State if the given angles are coterminal.

9)  $65^\circ, -295^\circ$   $65 - 360 = -295^\circ$   
yes

$230 - 360 = -130$   
 10)  $230^\circ, -490^\circ$   $-130 - 360 = -490^\circ$   
yes

11)  $240^\circ, 780^\circ$   
NO  $240 + 360 = 600$   
 $600 + 360 = 900$

12)  $105^\circ, 465^\circ$   
 $105 + 360 = 465$   
yes

Find a positive and a negative coterminal angle for each given angle.


13)  $225^\circ$   $+$ :  $225 + 360 = 585^\circ$   
 $-$ :  $225 - 360 = -135^\circ$


14)  $-10^\circ$   $+$ :  $-10 + 360 = 350^\circ$   
 $-$ :  $-10 - 360 = -370^\circ$


15)  $18^\circ$   
 $18 + 360 = 548^\circ$   
 $18 - 360 = -342^\circ$


16)  $135^\circ$   $+$ :  $135 + 360 = 495^\circ$   
 $-$ :  $135 - 360 = -225^\circ$


Find the exact value of each trigonometric function.


$\frac{y}{x}$  17)  $\tan 45^\circ = \frac{\sqrt{2}/2}{\sqrt{2}/2} = 1$   



$\frac{y}{x}$  18)  $\tan 135^\circ = \frac{\sqrt{2}/2}{-\sqrt{2}/2} = -1$   



x 19)  $\cos 0^\circ = 1$   



$\frac{y}{x}$  20)  $\tan 210^\circ = \frac{1/2}{-\sqrt{3}/2} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$   



y 21)  $\sin 405^\circ = \sin 45^\circ = \frac{\sqrt{2}}{2}$   


x 22)  $\cos 225^\circ = -\frac{\sqrt{2}}{2}$   


$\frac{y}{x}$  23)  $\tan 900^\circ = \tan 180^\circ = 0$   


24)  $\sin 750^\circ = \sin 30^\circ = \frac{1}{2}$   


$\frac{y}{x}$  25)  $\tan 225^\circ = \frac{-\sqrt{2}/2}{-\sqrt{2}/2} = 1$   


26)  $\cos -675^\circ = \cos 45^\circ = \frac{\sqrt{2}}{2}$   


9.3

Convert each degree measure into radians.

27)  $930^\circ \cdot \frac{\pi}{180^\circ} = \boxed{\frac{31\pi}{6}}$

28)  $705^\circ \cdot \frac{\pi}{180} = \boxed{\frac{47\pi}{12}}$

29)  $-125^\circ \cdot \frac{\pi}{180} = \boxed{-\frac{25\pi}{36}}$

30)  $515^\circ \cdot \frac{\pi}{180} = \boxed{\frac{103\pi}{36}}$

Convert each radian measure into degrees.


31)  $\frac{7\pi}{18} \cdot \frac{180}{\pi} = \boxed{70^\circ}$


32)  $\frac{17\pi}{12} \cdot \frac{180}{\pi} = \boxed{255^\circ}$

33)  $-\frac{17\pi}{9} \cdot \frac{180}{\pi} = \boxed{-140^\circ}$


34)  $-\frac{35\pi}{36} \cdot \frac{180}{\pi} = \boxed{-175^\circ}$


Find the exact value of each trigonometric function.


35)  $\tan \frac{11\pi}{6}$    $\frac{1/2}{-2/\sqrt{3}} = \frac{1}{2} \cdot \frac{2}{-\sqrt{3}} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{-\frac{\sqrt{3}}{3}}$

36)  $\cos \frac{11\pi}{6}$    $\boxed{\frac{\sqrt{3}}{2}}$


37)  $\tan \frac{\pi}{6}$    $\frac{1/2}{\sqrt{3}/2} = \boxed{\frac{\sqrt{3}}{3}}$

38)  $\tan \frac{\pi}{4}$    $\frac{\sqrt{2}/2}{\sqrt{2}/2} = \boxed{1}$


39)  $\sin \frac{\pi}{2}$    $\boxed{1}$

40)  $\cos \frac{5\pi}{6}$    $\boxed{-\frac{\sqrt{3}}{2}}$


41)  $\tan \frac{5\pi}{4}$    $\frac{-\sqrt{2}/2}{-\sqrt{2}/2} = \boxed{1}$

42)  $\cos \frac{4\pi}{3}$    $\boxed{-\frac{1}{2}}$

43)  $\sin \pi$    $\boxed{0}$

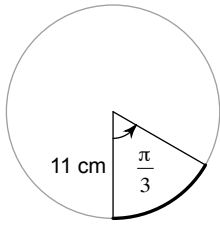
44)  $\sin -\frac{\pi}{4}$    $\boxed{-\frac{\sqrt{2}}{2}}$

45)  $\tan -\frac{5\pi}{6}$    $\frac{-1/2}{-\sqrt{3}/2} = \boxed{\frac{\sqrt{3}}{3}}$

46)  $\cos \frac{\pi}{4}$    $\boxed{\frac{\sqrt{2}}{2}}$

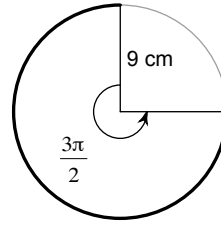
Find the length of each arc.  $s = r\theta$  ← in Radians

47)



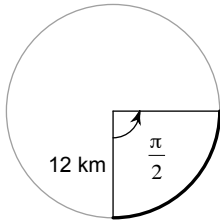
$$11 \cdot \frac{\pi}{3} = \boxed{11.52 \text{ cm}}$$

48)



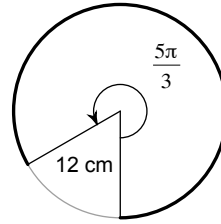
$$9 \cdot \frac{3\pi}{2} = \boxed{42.41 \text{ cm}}$$

49)



$$12 \cdot \frac{\pi}{2} = \boxed{18.85 \text{ km}}$$

50)

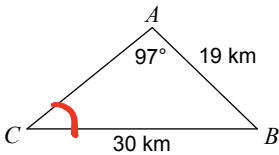


$$12 \cdot \frac{5\pi}{3} = \boxed{62.83 \text{ cm}}$$

## 9.4

Find each measurement indicated. Round all side lengths to the nearest hundredth and all angles to the nearest degree.

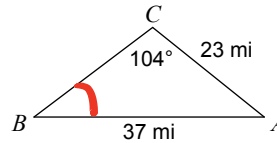
51) Find  $m\angle C$



$$\frac{\sin C}{19} = \frac{\sin 97^\circ}{30}$$

$$\boxed{C = 39^\circ}$$

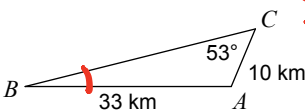
52) Find  $m\angle B$



$$\frac{\sin B}{23} = \frac{\sin 104^\circ}{37}$$

$$\boxed{B = 37^\circ}$$

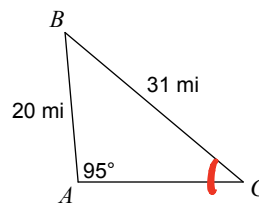
53) Find  $m\angle B$



$$\frac{\sin B}{10} = \frac{\sin 53^\circ}{33}$$

$$\boxed{B = 14^\circ}$$

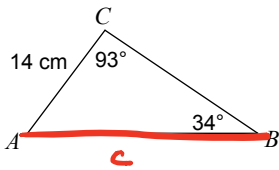
54) Find  $m\angle C$



$$\frac{\sin C}{20} = \frac{\sin 95^\circ}{31}$$

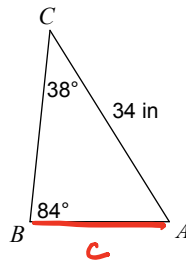
$$\boxed{C = 40^\circ}$$

55) Find AB



$$\frac{c}{\sin 93^\circ} = \frac{14}{\sin 34^\circ} \quad \boxed{c = 25 \text{ cm}}$$

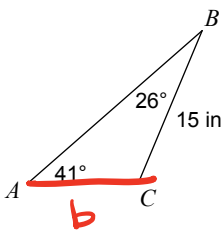
56) Find AB



$$\frac{c}{\sin 38^\circ} = \frac{34}{\sin 84^\circ}$$

$$\boxed{c = 21.05 \text{ in}}$$

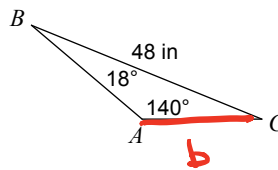
57) Find AC



$$\frac{b}{\sin 26^\circ} = \frac{15}{\sin 41^\circ}$$

$$\boxed{b = 10.02 \text{ in}}$$

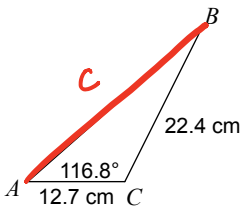
58) Find AC



$$\frac{b}{\sin 18^\circ} = \frac{48}{\sin 140^\circ}$$

$$\boxed{b = 23.08 \text{ in}}$$

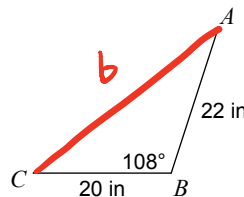
59) Find AB



$$c^2 = 22.4^2 + 12.7^2 - 2(22.4)(12.7)\cos 116.8^\circ$$

$$\boxed{c = 30.32 \text{ cm}}$$

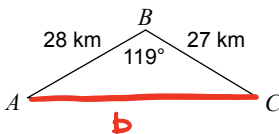
60) Find AC



$$b^2 = 22^2 + 20^2 - 2 \cdot 20 \cdot 22 \cos 108^\circ$$

$$\boxed{b = 35.77 \text{ in}}$$

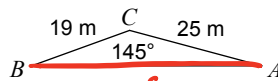
61) Find AC



$$b^2 = 28^2 + 27^2 - 2 \cdot 28 \cdot 27 \cos 119^\circ$$

$$\boxed{b = 47.39}$$

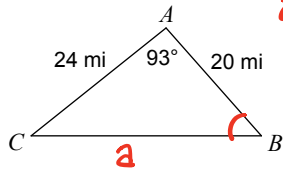
62) Find AB



$$c^2 = 19^2 + 25^2 - 2 \cdot 19 \cdot 25 \cos 145^\circ$$

$$\boxed{c = 42 \text{ m}}$$

63) Find  $m\angle B$



Find a first

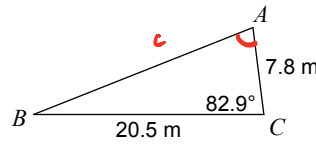
$$a^2 = 24^2 + 20^2 - 2 \cdot 24 \cdot 20 \cos 93^\circ$$

$$a = 32.04$$

$$\frac{\sin B}{24} = \frac{\sin 93}{32.04}$$

$$B = 48^\circ$$

64) Find  $m\angle A$



Find c first

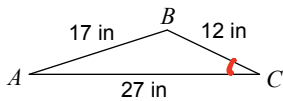
$$c^2 = 7.8^2 + 20.5^2 - 2(7.8)(20.5) \cos 82.9^\circ$$

$$c = 21.01$$

$$\frac{\sin A}{20.5} = \frac{\sin 82.9}{21.01}$$

$$A = 76^\circ$$

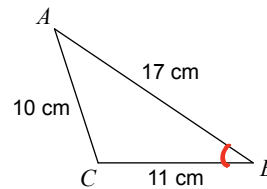
65) Find  $m\angle C$



$$17^2 = 12^2 + 27^2 - 2(12)(27) \cos C$$

$$C = 59^\circ$$

66) Find  $m\angle B$

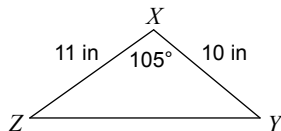


$$10^2 = 17^2 + 11^2 - 2(17)(11) \cos B$$

$$B = 34^\circ$$

Find the area of each triangle to the nearest tenth.

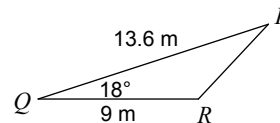
67)



$$\frac{1}{2} (11)(10) \sin 105^\circ$$

$$53.13 \text{ in}^2$$

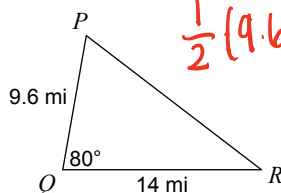
68)



$$\frac{1}{2} (9)(13.6) \sin 18^\circ$$

$$18.91 \text{ m}^2$$

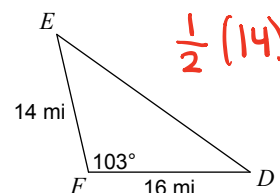
69)



$$\frac{1}{2} (9.6)(14) \sin 80^\circ$$

$$11.67 \text{ mi}^2$$

70)



$$\frac{1}{2} (14)(16) \sin 103^\circ$$

$$109.13 \text{ mi}^2$$