

Practice Test 5.1 to 5.5

Convert each decimal degree measure into degrees-minutes-seconds.

1) 172.385°

$172^\circ 23' 6''$

2) -225.0225°

$-225^\circ 1' 21''$

CALC

2ND ANGLE

4: DMS

Convert each degrees-minutes-seconds into decimal degrees. Round to nearest thousandth.

3) $-50^\circ 44' 6''$

-50.735°

4) $287^\circ 3' 36''$

287.06

CALC

287 2ND 4 15

3 2ND 4 21

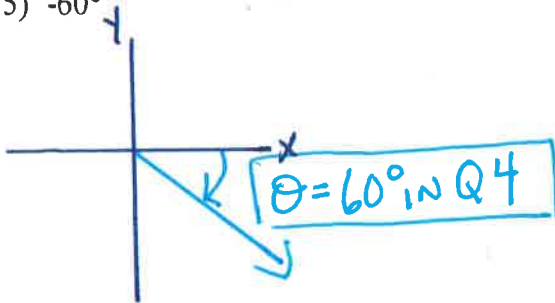
36 ALPHA

↑ ABOVE

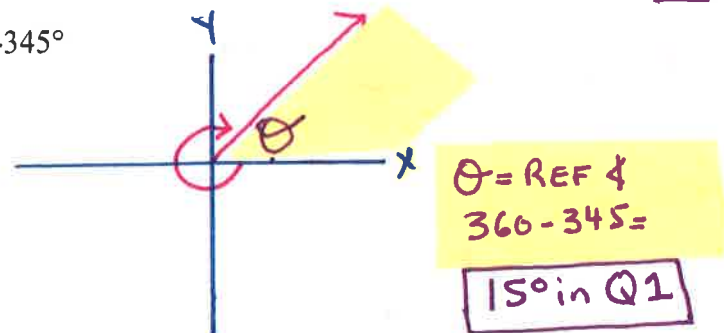
+

(1) Sketch the angle. (2) Determine the reference angle or write "QUADRANTAL ANGLE."
(3) & State its quadrant;

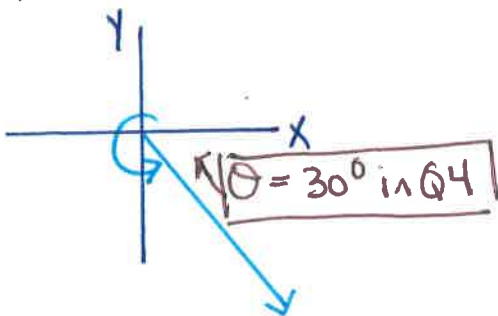
5) -60°



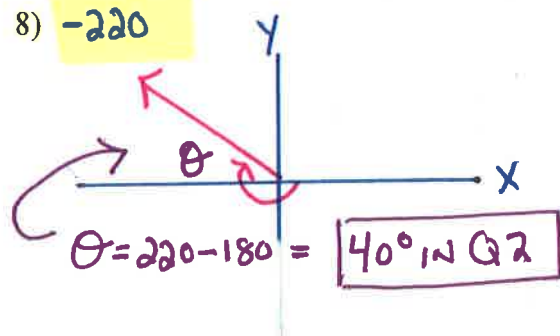
6) -345°



7) 330°



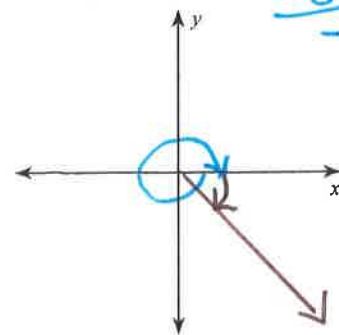
8) -220



Draw an angle with the given measure in standard position.

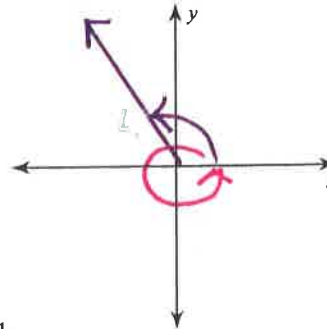
9) -380°

-380
 $+360$
 -20



10) 470°

470
 -360
 110



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

11) 365°

$$365 + 360 = 725^\circ \quad \leftarrow \text{either}$$

$$365 - 360 = 5^\circ \quad \leftarrow$$

$$-360$$

$$-355^\circ$$

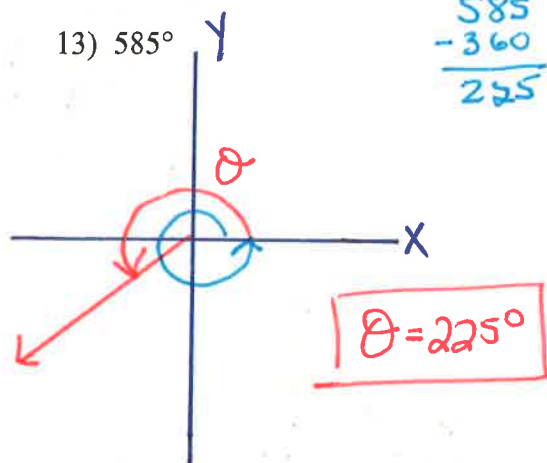
12) -30°

$$-30^\circ + 360^\circ = 330^\circ$$

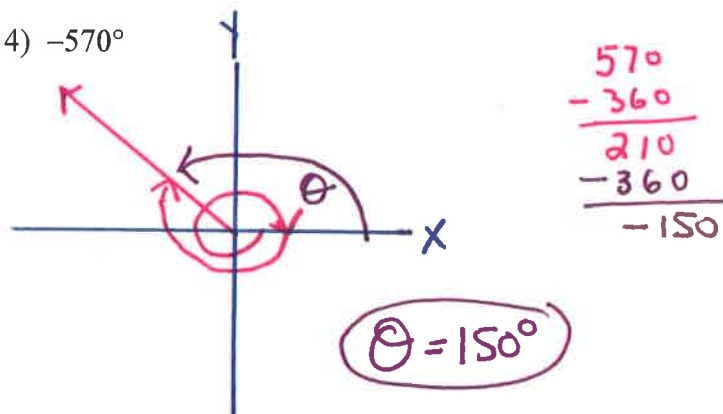
$$-30^\circ - 360^\circ = -390^\circ$$

Find a coterminal angle between 0° and 360° . Provide a sketch to show the location of this angle.

13) 585°



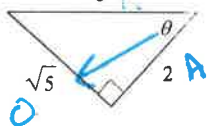
14) -570°



Find the value of the trig function indicated. Give answers in simple radical form.

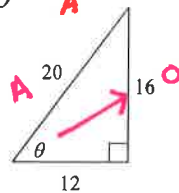
SOH CAHTOA

15) $\cot \theta = \frac{A}{O}$



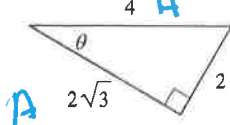
$$\frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$$

16) $\tan \theta = \frac{O}{A}$



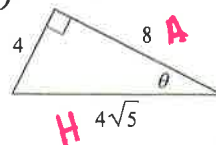
$$\frac{16}{12} = \frac{4}{3}$$

17) $\cos \theta = \frac{A}{H}$



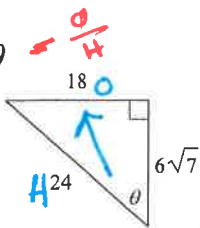
$$\frac{4\sqrt{3}}{4\sqrt{3}} = \frac{\sqrt{3}}{2}$$

18) $\sec \theta = \frac{H}{A}$



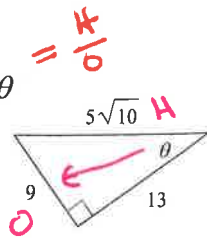
$$\frac{4\sqrt{5}}{8} = \frac{\sqrt{5}}{2}$$

19) $\sin \theta$



$$\frac{18}{24} = \boxed{\frac{3}{4}}$$

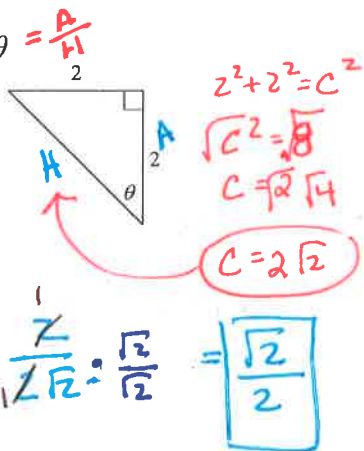
20) $\csc \theta$



$$\boxed{\frac{5\sqrt{10}}{9}}$$

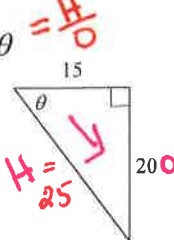
Find the value of the trig function indicated. Answer in simple radical form.

21) $\cos \theta$



$$\frac{2}{2\sqrt{2}} = \frac{\sqrt{2}}{2} = \boxed{\frac{\sqrt{2}}{2}}$$

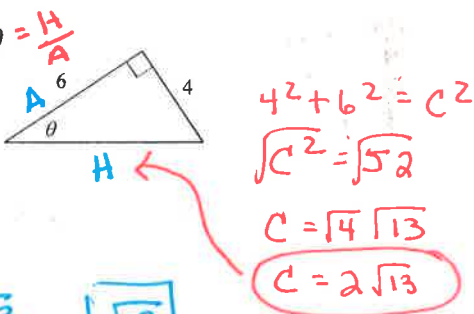
22) $\csc \theta$



$15^2 + 20^2 = c^2$
 $\sqrt{c^2} = \sqrt{625}$
 $c = 25$

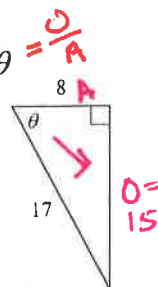
$$\frac{25}{20} = \boxed{\frac{5}{4}}$$

23) $\sec \theta$



$$\frac{2\sqrt{13}}{6} = \boxed{\frac{\sqrt{13}}{3}}$$

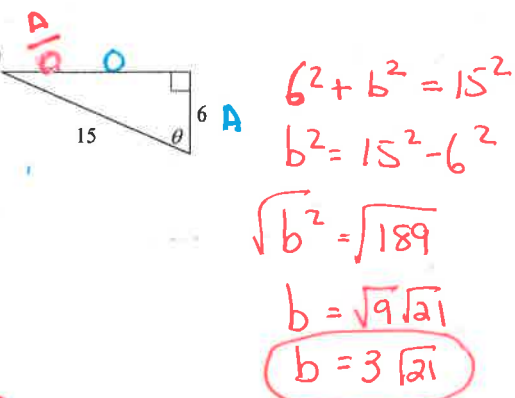
24) $\tan \theta$



$8^2 + b^2 = 17^2$
 $b^2 = 17^2 - 8^2$
 $b^2 = 225$
 $b = 15$

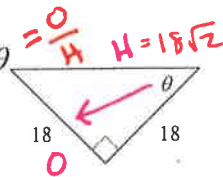
$$\boxed{\frac{15}{8}}$$

25) $\cot \theta$



$$\frac{6}{3\sqrt{21}} = \frac{\sqrt{21}}{\sqrt{21}} = \boxed{\frac{2\sqrt{21}}{21}}$$

26) $\sin \theta$

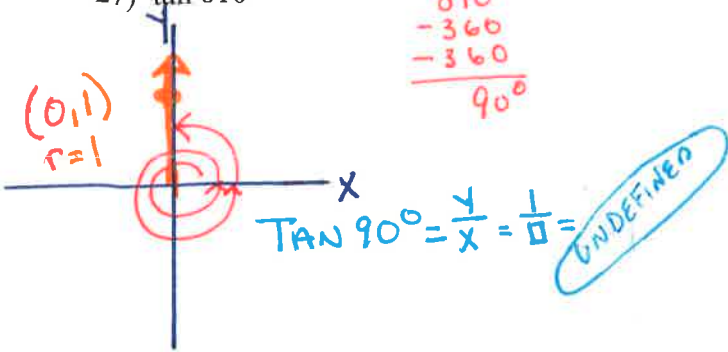


$18^2 + 18^2 = c^2$
 $\sqrt{c^2} = \sqrt{648}$
 $c = \sqrt{2} \sqrt{324}$
 $c = 18\sqrt{2}$

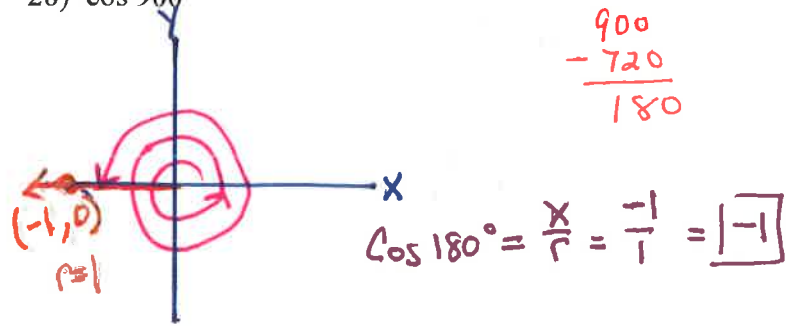
$$\frac{18}{18\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{\sqrt{2}}{2}}$$

SKETCH THE GRAPH!!!! Find the exact value of each trigonometric function. You must show your work.

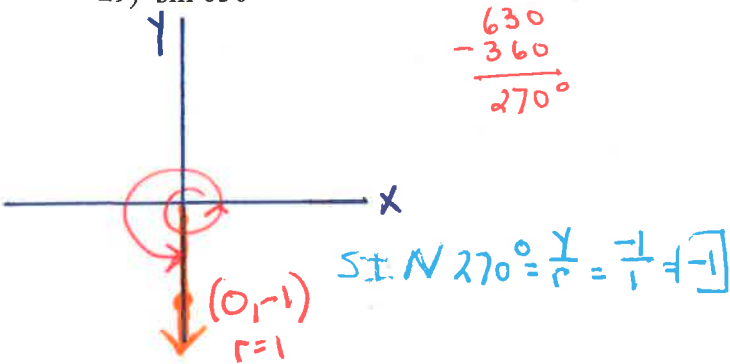
27) $\tan 810^\circ$



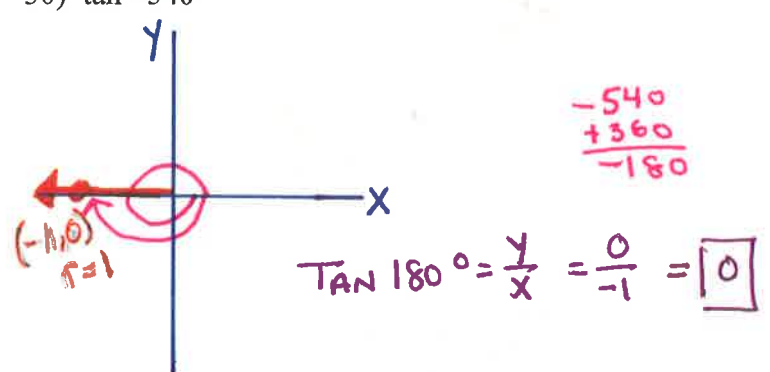
28) $\cos 90^\circ$



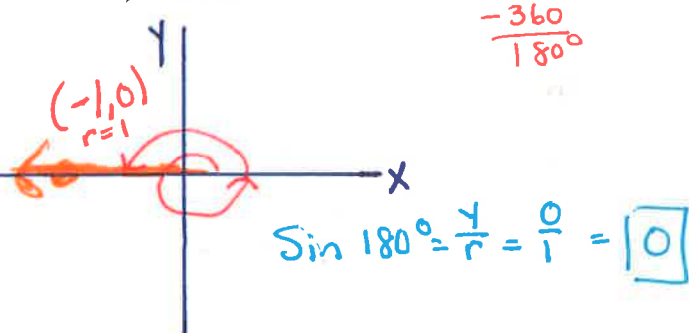
29) $\sin 630^\circ$



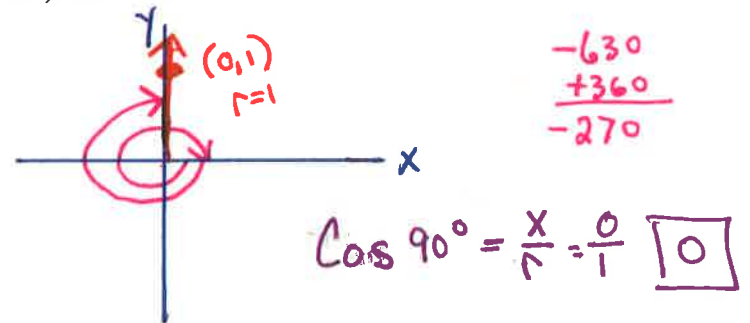
30) $\tan -540^\circ$



31) $\sin 540^\circ$

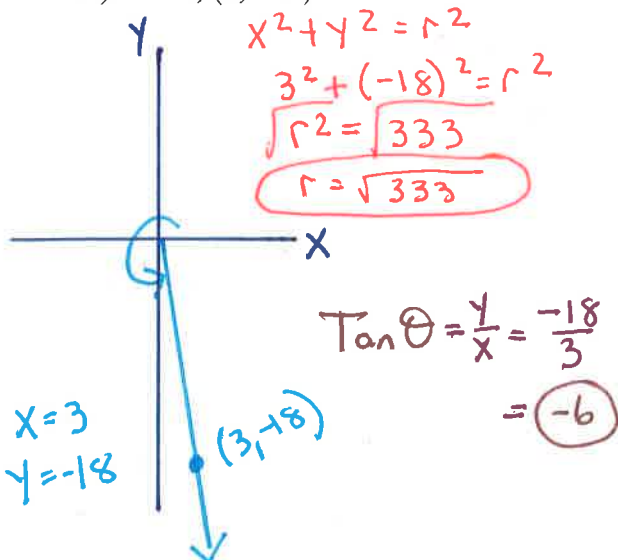


32) $\cos -630^\circ$

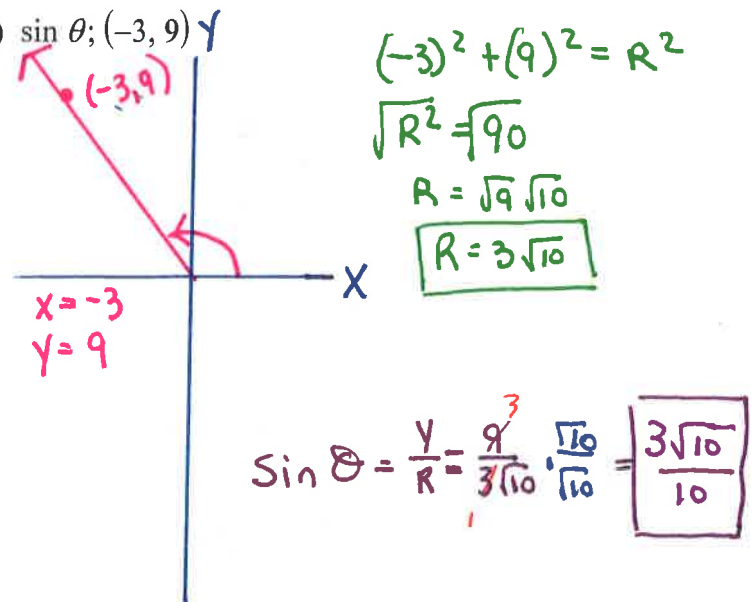


Use the given point to find the value of the trigonometric functions indicated.
SKETCH THE GRAPH!!!!

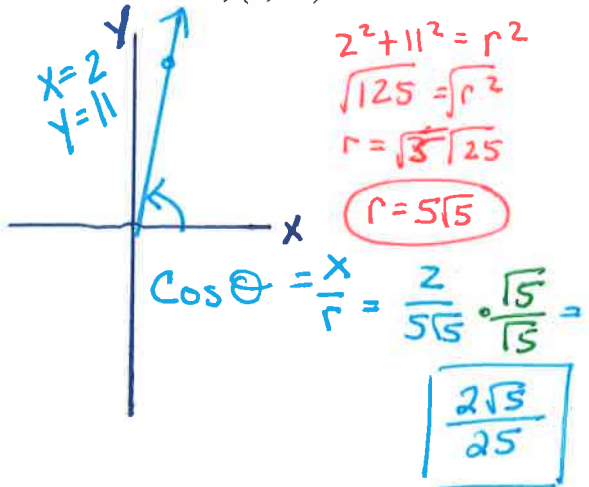
33) $\tan \theta; (3, -18)$



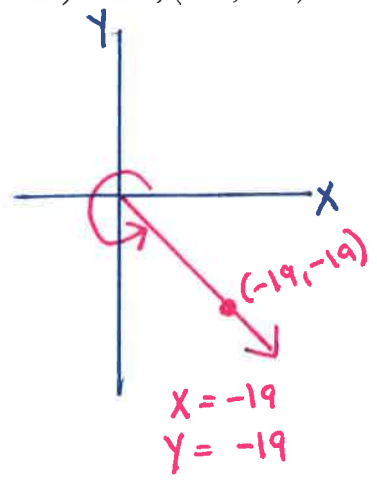
34) $\sin \theta; (-3, 9)$



35) $\cos \theta; (2, 11)$



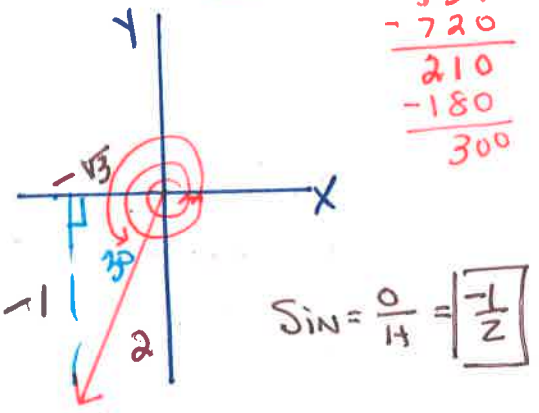
36) $\sin \theta; (-19, -19)$



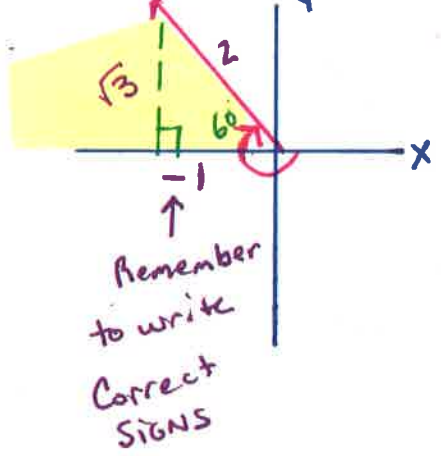
$(-19)^2 + (-19)^2 = R^2$
 $\sqrt{R^2} = \sqrt{722}$
 $R = \sqrt{361} \sqrt{2}$
 $R = 19\sqrt{2}$
 $\sin \theta = \frac{y}{r} = \frac{-19}{19\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{-\sqrt{2}}{2}$

SKETCH THE GRAPH!!!!!! Find the exact value of each trigonometric function. Show work include the reference angle and label the sides used in your calculation.

37) $\sin 930^\circ$



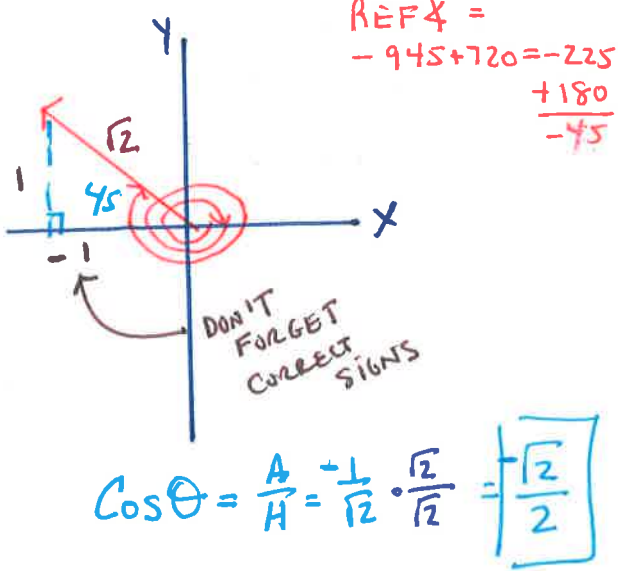
38) $\sin -240^\circ$



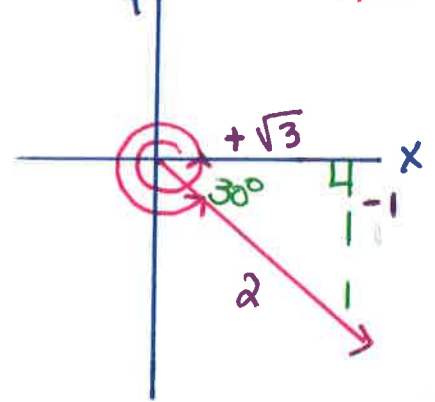
Ref $\angle = 240 - 180 = 60^\circ$

$\sin \theta = \frac{0}{1} = \frac{\sqrt{3}}{2}$

39) $\cos -945^\circ$



40) $\cos 690^\circ$

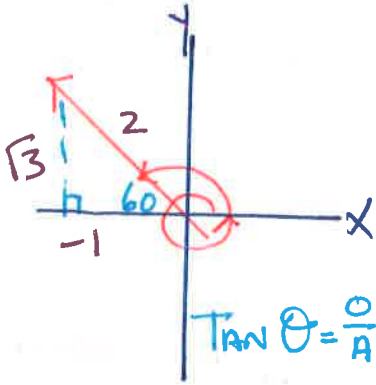


REF $\angle = 690 - 360 = 330 - 360 = -30$

$\cos \theta = \frac{A}{H} = \frac{\sqrt{3}}{2}$

41) $\tan 480^\circ$

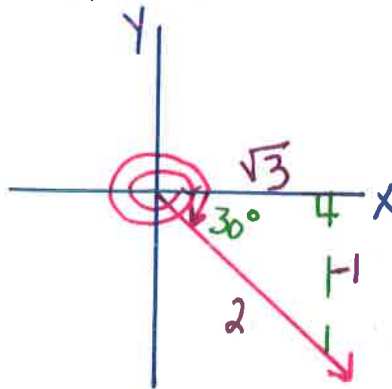
$$\frac{480}{-360} = \frac{120}{-90}$$



$$\tan \theta = \frac{O}{A} = \frac{\sqrt{3}}{-1} = \boxed{-\sqrt{3}}$$

42) $\tan -750^\circ$

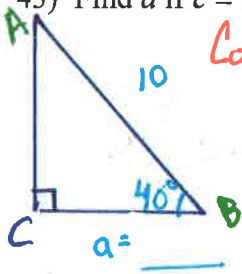
Ref \angle $750 - 2(360) = 30^\circ$



$$\tan \theta = \frac{O}{A} = \frac{-1}{\sqrt{3}} = \frac{-\sqrt{3}}{3} = \boxed{-\frac{\sqrt{3}}{3}}$$

In each problem, angle C is a right angle. Sketch and label the triangle. Find the side indicated to the nearest tenth.

43) Find a if $c = 10$, $m\angle B = 40^\circ$



$$\cos 40^\circ = \frac{a}{c} = \frac{a}{10}$$

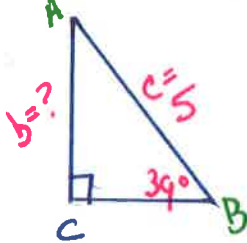
$$.7660 = \frac{a}{10}$$

$$a = .7660(10)$$

$$a = 7.66$$

$$\boxed{a \approx 7.7}$$

44) Find b if $m\angle B = 39^\circ$, $c = 5$



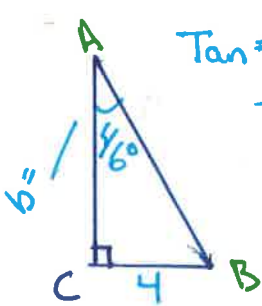
$$\sin 39^\circ = \frac{b}{c} = \frac{b}{5}$$

$$.629 = \frac{b}{5}$$

$$b = (.629)(5) = 3.14$$

$$\boxed{b \approx 3.1}$$

45) Find b if $m\angle A = 46^\circ$, $a = 4$



$$\tan = \frac{O}{A} = \frac{a}{b}$$

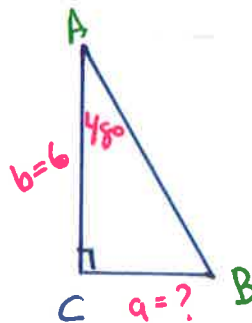
$$\tan 46^\circ = \frac{4}{b}$$

$$1.0355 = \frac{4}{b}$$

$$b = \frac{4}{1.0355} = 3.86$$

$$\boxed{b \approx 3.9}$$

46) Find a if $m\angle A = 48^\circ$, $b = 6$



$$\tan 48^\circ = \frac{a}{b} = \frac{a}{6}$$

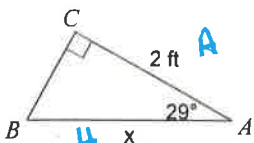
$$1.1106 = \frac{a}{6}$$

$$a = (1.1106)(6) = 6.66$$

$$\boxed{a \approx 6.7}$$

Find the measure of each side indicated. Round to the nearest tenth.

47)



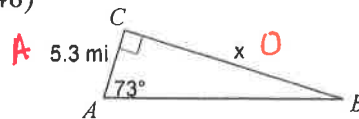
$$\cos 29^\circ = \frac{A}{H} = \frac{2}{x}$$

$$.8746 = \frac{2}{x}$$

$$x = \frac{2}{.8746} = 2.29$$

$$\boxed{x \approx 2.3 \text{ ft}}$$

48)



$$\tan 73^\circ = \frac{O}{A} = \frac{x}{5.3}$$

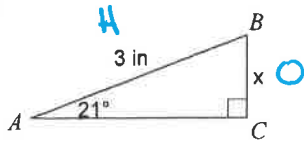
$$3.2709 = \frac{x}{5.3}$$

$$x = (3.2709)(5.3) = 17.33$$

$$\boxed{x \approx 17.3 \text{ miles}}$$

Remember Units

49)

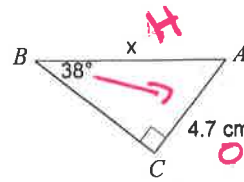


$$\sin 21^\circ = \frac{O}{H} = \frac{x}{3}$$

$$.3584 = \frac{x}{3}$$

$$x = .3584(3) = 1.07 \quad \boxed{x \approx 1.1 \text{ in}}$$

50)



$$\sin 38^\circ = \frac{O}{H} = \frac{4.7}{x}$$

$$.6157 = \frac{4.7}{x}$$

$$.6157x = 4.7$$

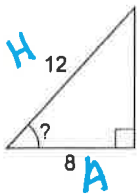
$$\frac{.6157x}{.6157} = \frac{4.7}{.6157}$$

$$x = 7.634$$

$$\boxed{x \approx 7.6 \text{ cm}}$$

Find the measure of the indicated angle to the nearest degree.

51)

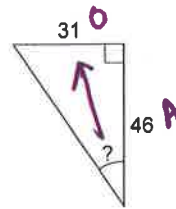


$$\cos \theta = \frac{A}{H} = \frac{8}{12}$$

$$\theta = \cos^{-1}\left(\frac{8}{12}\right) = 48.19$$

$$\boxed{\theta = 48^\circ}$$

52)



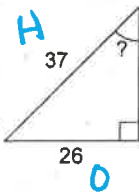
$$\tan \theta = \frac{O}{A} = \frac{31}{46}$$

$$\theta = \tan^{-1}\left(\frac{31}{46}\right)$$

$$\theta = 33.97$$

$$\boxed{\theta = 34^\circ}$$

53)

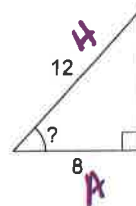


$$\sin \theta = \frac{O}{H} = \frac{26}{37}$$

$$\theta = \sin^{-1}\left(\frac{26}{37}\right) = 44.6$$

$$\boxed{\theta = 45^\circ}$$

54)



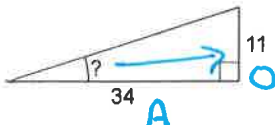
$$\cos \theta = \frac{A}{H} = \frac{8}{12}$$

$$\theta = \cos^{-1}\left(\frac{8}{12}\right)$$

$$\theta = 48.189$$

$$\boxed{\theta = 48^\circ}$$

55)

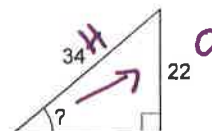


$$\tan \theta = \frac{O}{A} = \frac{11}{34}$$

$$\theta = \tan^{-1}\left(\frac{11}{34}\right) = 17.9$$

$$\boxed{\theta = 18^\circ}$$

56)



$$\sin \theta = \frac{O}{H} = \frac{22}{34}$$

$$\theta = \sin^{-1}\left(\frac{22}{34}\right)$$

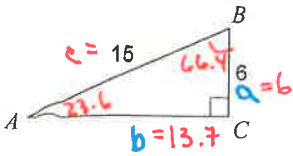
$$\theta = 40.32$$

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

EITHER CLEARLY TAGGE THE Δ
OR WRITE OUT

Solve each triangle. Round answers to the nearest tenth.

57)



$$\cos B = \frac{A}{H} = \frac{6}{15}$$

$$B = \cos^{-1}\left(\frac{6}{15}\right)$$

$$\cancel{B} = 66.4^\circ$$

$$\downarrow$$

$$\cancel{A} = 90 - 66.4$$

$$\boxed{A = 23.6^\circ}$$

$$\angle A = 23.6^\circ$$

$$\angle B = 66.4^\circ$$

$$\angle C = 90^\circ$$

$$a = 6$$

$$b = 13.7$$

$$c = 15$$

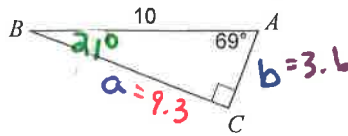
$$6^2 + b^2 = 15^2$$

$$b^2 = 15^2 - 6^2$$

$$\sqrt{b^2} = \sqrt{189}$$

$$\boxed{b \approx 13.7}$$

58)



$$\sin A = \frac{a}{c}$$

$$\sin 69^\circ = \frac{a}{10}$$

$$.9335 = \frac{a}{10}$$

$$\boxed{a = 9.3}$$

$$\cos A = \frac{b}{c}$$

$$\cos 69^\circ = \frac{b}{10}$$

$$.3583 = \frac{b}{10}$$

$$\boxed{b = 3.6}$$

$$\angle A = 69^\circ$$

$$\angle B = 90 - 69^\circ = 21^\circ$$

$$\angle C = 90^\circ$$

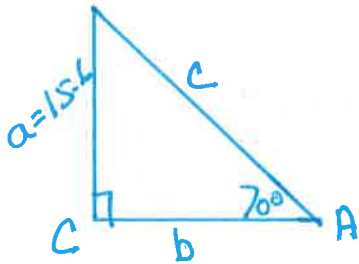
$$a = 9.3$$

$$b = 3.6$$

$$c = 10$$

In each problem, angle C is a right angle. Sketch and label the graph. Solve each triangle rounding answers to the nearest tenth.

59) $m\angle A = 70^\circ$, $a = 15.6$



$$\sin 70^\circ = \frac{a}{c} = \frac{15.6}{c}$$

$$.9397 = \frac{15.6}{c}$$

$$c = \frac{15.6}{.9397}$$

$$\boxed{c = 16.6}$$

$$\cos 70^\circ = \frac{b}{c} = \frac{b}{16.6}$$

$$.3420 = \frac{b}{16.6}$$

$$b = .3420(16.6) = 5.68$$

$$\boxed{b \approx 5.7}$$

$$\angle A = 70^\circ$$

$$\angle B = 20^\circ (90 - 70)$$

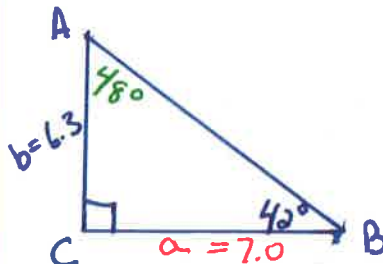
$$\angle C = 90^\circ$$

$$a = 15.6$$

$$b = 5.7$$

$$c = 16.6$$

60) $b = 6.3$, $m\angle B = 42^\circ$



$$\tan A = \tan 48^\circ = \frac{a}{b}$$

$$1.1106 = \frac{a}{6.3}$$

$$\boxed{a = 7.0}$$

$$a^2 + b^2 = c^2$$

$$7^2 + (6.3)^2 = c^2$$

$$\sqrt{c^2} = \sqrt{88.69}$$

$$\boxed{c = 9.4}$$

$$\angle A = 48^\circ$$

$$\angle B = 42^\circ$$

$$\angle C = 90^\circ$$

$$a = 7.0$$

$$b = 6.3$$

$$c = 9.4$$