

T2 - Solving Right Triangles

Example 3 Finding a missing side length

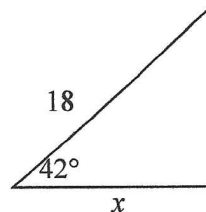
Find the value of x . Round to the nearest length, if necessary.

θ , hyp, adj
 $\cos \theta = \frac{\text{adj}}{\text{hyp}}$

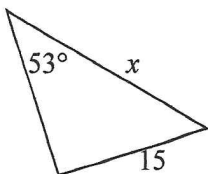
$$(18)\cos 42^\circ = \frac{x}{18} (18)$$

$$x = 18 \cos 42^\circ$$

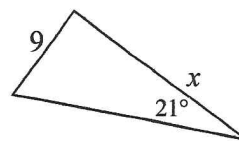
$$x = 13.4$$



You Try a)



You Try b)



Inverse Trig Functions

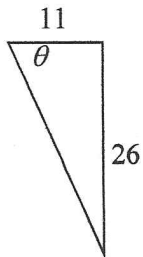
If $\sin \theta = x$, then $\sin^{-1} x = \theta$

$$\cos \theta = x ; \cos^{-1} x = \theta$$

$$\tan \theta = x ; \tan^{-1} x = \theta$$

Example 4 Find a missing angle measure

Use a trig function to find the measure of θ . Round to the nearest degree, if necessary.



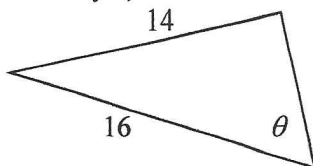
opp, adj, $\theta \Rightarrow \tan$

$$\tan \theta = \frac{26}{11}$$

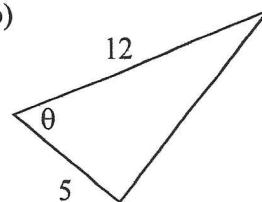
$$\tan^{-1} \left(\frac{26}{11} \right) = \theta$$

$$\theta = 67^\circ$$

You Try a)

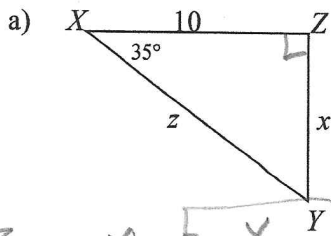


You Try b)



Example 5 Solve a right triangle

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

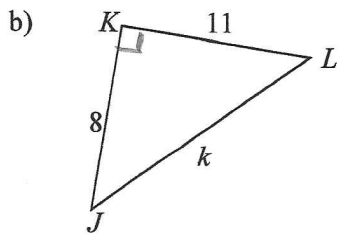


$x = 7$	$X = 35^\circ$
$y = 10$	$Y = 55^\circ$
$z = 12.2$	$Z = 90^\circ$

① $Z - X = Y$
 $90^\circ - 35^\circ = 55^\circ$

② $\tan 35^\circ = \frac{x}{10}$
 $x = 10 \tan 35^\circ$ $x = 7$

③ $7^2 + 10^2 = z^2$
 $49 + 100 = z^2$
 $z^2 = 149$ $z = \sqrt{149} = 12.2$



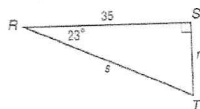
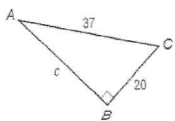
$J = 11$ $J = 54^\circ$
 $k = 13.6$ $K = 90^\circ$
 $l = 8$ $L = 36^\circ$

① $\tan J = \frac{11}{8}$
 $\tan^{-1}(\frac{11}{8}) = J$
 $J = 54^\circ$

③ $8^2 + 11^2 = k^2$
 $k^2 = 64 + 121$
 $k^2 = 185$
 $k = \sqrt{185} = 13.6$

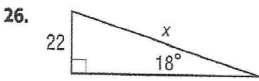
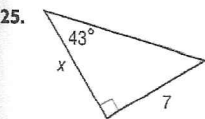
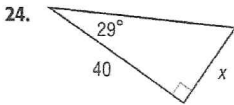
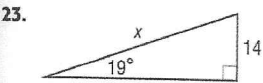
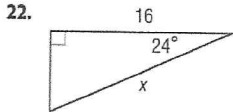
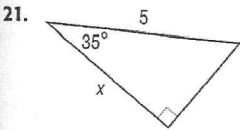
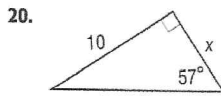
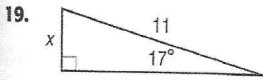
② $90 - 54 = 36$

You Try

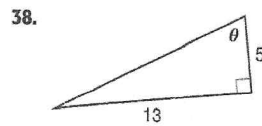
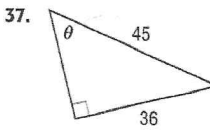
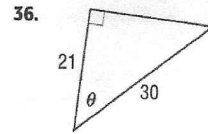
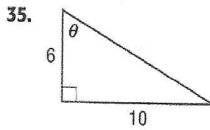
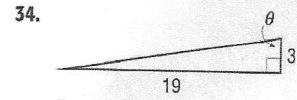
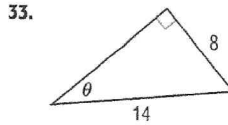
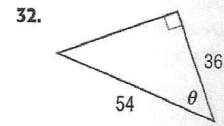
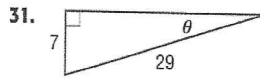


T2 HW (19-26, 31-38, 47-54)

Find the value of x . Round to the nearest tenth, if necessary. (Example 3)



Find the measure of angle θ . Round to the nearest degree, if necessary. (Example 5)



Solve each triangle. Round side lengths to the nearest tenth and angle measures to the nearest degree. (Example 8)

