Find θ if θ is between $0°$ and $90°$. Round your answers to the nearest tenth of a degree.

1. $\cos\theta = 0.3256$ $\theta = 71°$

    $\sin\theta = 0.9077$ $\theta = 65°$

Now set up $\triangle ABC$ with $C = 90°$ and solve for the unknown angles and sides.
Round all answers to the nearest tenth.

                                      7.7   9.2   50°

2. In right triangle ABC, A= 40° and c= 12 centimeters. Find a, b, and B.   c = 4.4

    In right triangle ABC, a= 2.73 feet and b=3.41 feet. Find the remaining side and angles.   A = 38.7°

    A = 49°, a = 2.2 ft, b = 1.9 ft   B = 41   c = 2.91   B = 51.3°

    b = 9.7 yd, B = 35°, c = 17.0 yd   a = 13.9   A = 55°

Now set up $\triangle ABC$ with $C = 90°$ and solve for the unknown angles and sides.
Round all answers to the nearest tenth.

3. A= 49.8°, B =40.2°, a = 12.1 in   b ...   c ...

    c = 92.8 cm, A = 52°, B = 38°   C = 90, a = 73.1   b = 57.1

    a = 1.8 ft, b = 2.3 ft, B = 51°45'   C = 2.9, A = 38° 15'

    The circle has its center at C and radius of 18 inches. If triangle ABC is a right triangle and A= 35°, find x, the distance from A to B.
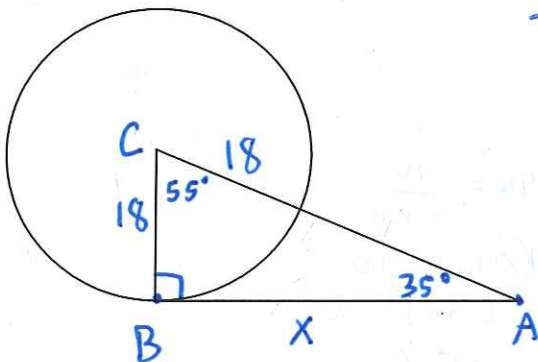
$$\tan 35 = \frac{18}{x}$$

$$x = 25.7$$

4. Use the information given in the diagram to solve the triangle to the nearest degree.
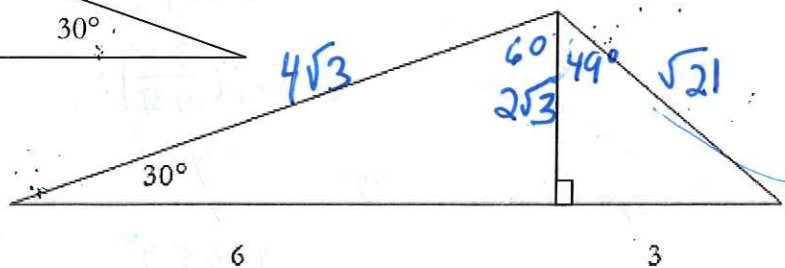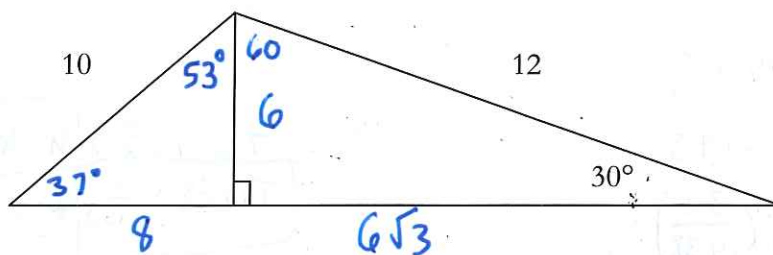
7. In 1897, a Ferris Wheel was built in Vienna that still stands today. It is named Riesenrad, which translates to the **Great Wheel**. The diameter of the Riesenrad is 197 feet. The top of the wheel stands 209 feet above the ground. The figure show below is a model of the Riesenrad with angle θ as the central angle that is formed as a rider moves from the initial position P_0 to position P_1. The rider is **h** feet above the ground at position P_1. Round to the nearest tenth. Find h if $\theta=40°$ and find h if $\theta=75°$.

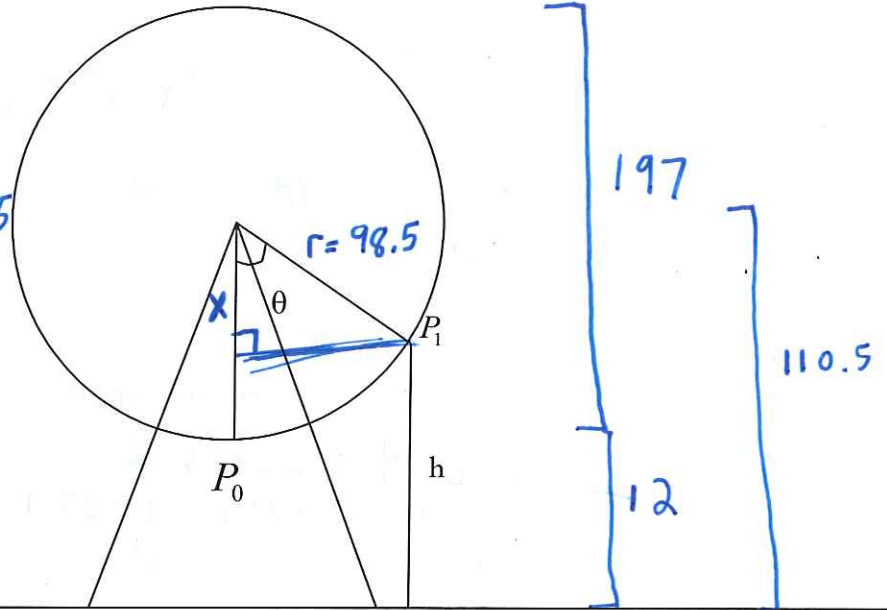   a. Find **h** if $\theta = 40°$.

    b. Find **h** if $\theta = 75°$

$h = 110.5 - X$

a) $\cos 40° = \dfrac{X}{98.5}, \quad X = 75.5$

$h = 110.5 - 75.5 = 35$

b) $\cos 75 = \dfrac{X}{98.5}$

$h = 85$

$r = 98.5$

P_1

P_0

h

197

110.5

12

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5. Complete the triangle.
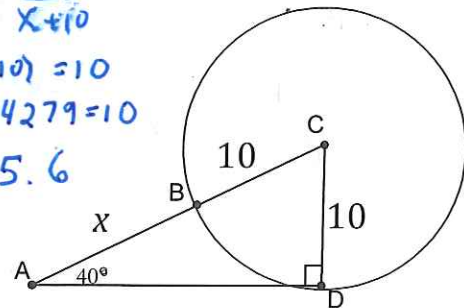
A

5.23   13.4

C   B

12.3
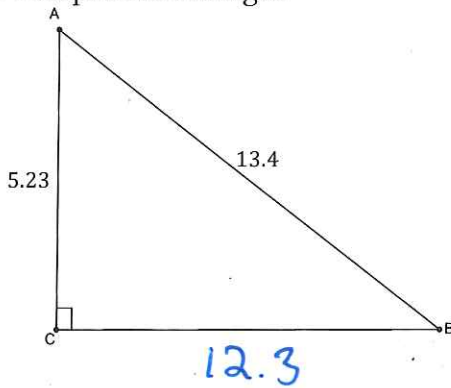
The circle has its center at C and a radius of 10 inches. If a triangle ADC is a right triangle and A is 40°, find x, the distance from A to B.
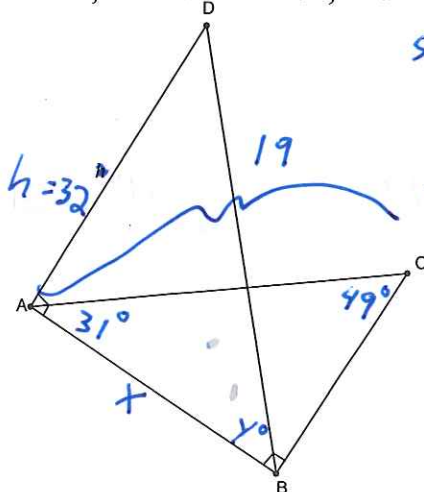
$\sin 40 = \dfrac{10}{X+10}$

$(\sin 40)(X + 10) = 10$

$.6423 X + 6.4279 = 10$

$X = 5.6$

C

10   B

X 10

A 40° D

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6. If AC= 19, h=32 and C= 49°, find $\angle ABD$.

D

$\sin 49 = \dfrac{X}{19}$

$X = 14.3$

$\tan^{-1}\left(\dfrac{32}{14.3}\right)$

$= y$

$y = 65.9°$

$h = 32$

19

A 31°

C 49°

y°

B

Solve for x, given $\angle A = 38°$ and $\angle D = 54°$.(Hint: Create two equations and solve the system of equations!)

B

h

C   x   54   D   38   32   A
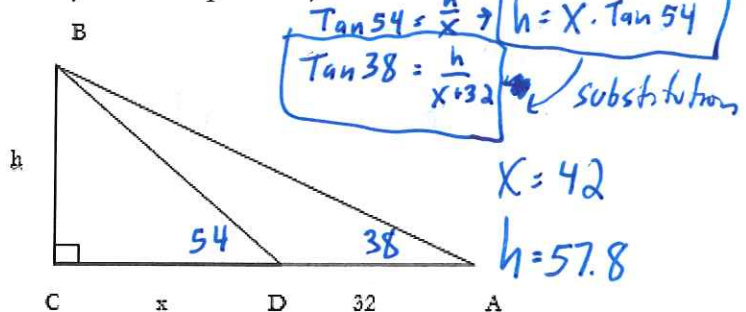
$\tan 54 = \dfrac{h}{X} \rightarrow \boxed{h = X \cdot \tan 54}$

$\boxed{\tan 38 = \dfrac{h}{X+32}}$ ← substitution

$X = 42$

$h = 57.8$