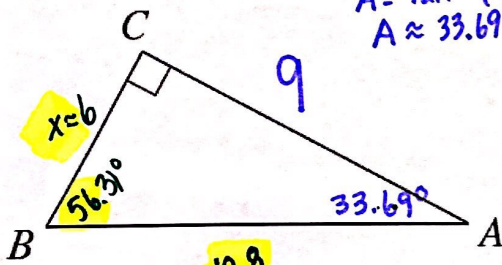


Solving Right Triangles

Find all the missing sides and angles in each right triangle.

Ex 1) Given: $\overline{CA} = 9$ and $\tan(\angle CAB) = 2/3$

$\tan A = 2/3$
 $A = \tan^{-1}(2/3)$
 $A \approx 33.69^\circ$

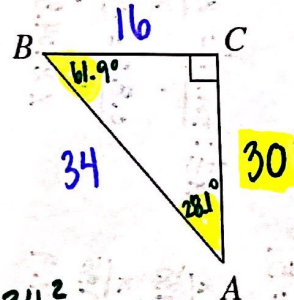


$\overline{BC} : \tan 33.69^\circ = \frac{x}{9}$
 $\frac{0.667}{1} = \frac{x}{9}$
 $x \approx 6$

$\angle B : 90 - 33.69^\circ$
 $\angle B \approx 56.31^\circ$

 $\overline{BA} : 6^2 + 9^2 = x^2$
 $36 + 81 = x^2$
 $117 = x^2$
 $\sqrt{117} = x$
 $3\sqrt{13} = x$
 $10.8 \approx x$

Ex 2) Given: $\overline{AB} = 34$ and $\overline{BC} = 16$



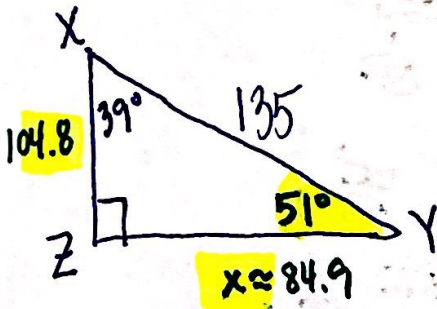
$\overline{AC} : 16^2 + x^2 = 34^2$
 $256 + x^2 = 1156$
 $\sqrt{x^2} = \sqrt{900}$
 $x = 30$

$\angle A : \sin A = \frac{16}{34}$
 $A = \sin^{-1}(\frac{16}{34})$
 $A \approx 28.1^\circ$

$\angle B : \cos B = \frac{16}{34}$
 $B = \cos^{-1}(\frac{16}{34})$
 $B \approx 61.9^\circ$
 OR $90 - 28.1 = 61.9^\circ$

① In right triangle $\triangle XYZ$, $\angle X$ and $\angle Y$ are complementary.

$$m\angle X = 39^\circ \quad \overline{XY} = 135$$



$$\angle Y: 90 - 39^\circ = 51^\circ$$

$$\overline{ZY}: \frac{\cos 51^\circ}{1} = \frac{x}{135}$$

$$\frac{0.629}{1} = \frac{x}{135}$$

$$x \approx 84.9$$

$$\overline{XZ}: \frac{\tan 39^\circ}{1} = \frac{84.9}{x}$$

$$\frac{0.810}{1} = \frac{84.9}{x}$$

$$x \approx 104.8$$