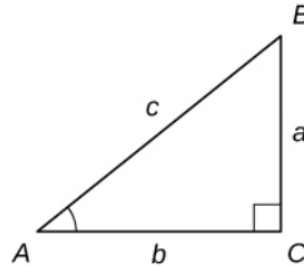


## Exercise 131

For the following exercises, consider triangle ABC, a right triangle with a right angle at  $C$ . a. Find the missing side of the triangle. b. Find the six trigonometric function values for the angle at  $A$ . Where necessary, round to one decimal place.



$$b = 85.3, c = 125.5$$

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### Solution

The sides of a right triangle are related by the Pythagorean theorem.

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

Plug in the numbers for  $a$  and  $b$ , and solve for  $c$ .

$$85.3^2 + 125.5^2 = c^2$$

$$23026.34 = c^2$$

$$c \approx 151.7$$

Therefore, the six trigonometric functions are

$$\sin A = \frac{a}{c} = \frac{85.3}{151.7}$$

$$\cos A = \frac{b}{c} = \frac{125.5}{151.7}$$

$$\tan A = \frac{a}{b} = \frac{85.3}{125.5}$$

$$\csc A = \frac{c}{a} = \frac{151.7}{85.3}$$

$$\sec A = \frac{c}{b} = \frac{151.7}{125.5}$$

$$\cot A = \frac{b}{a} = \frac{125.5}{85.3}$$