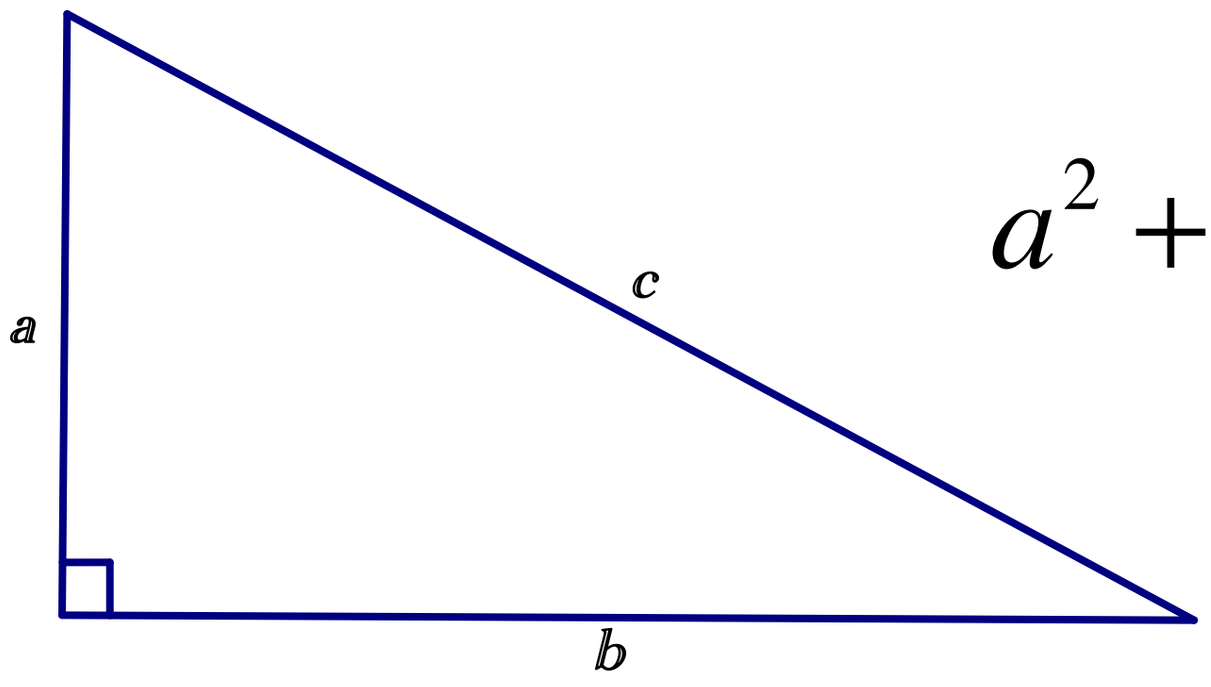
Calculating Sine, Cosine, & Tangent (5.9.1)

May 26th, 2020

Don’t Forget…

*The Pythagorean Theorem can be used to find a missing side length in a right triangle, as long as you know the other two side lengths.



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

Finding Trigonometric Ratios

Ex. 1: In $\triangle XYZ$, $\angle Y$ is a right angle and $\cos X = \frac{12}{13}$. What are the sine and tangent of $\angle Z$? Write your answers as fractions and decimals. (Draw a labeled diagram of the triangle first.)

Using Trigonometric Ratios to Find Missing Side Lengths in Right Triangles

Ex. 2: At a certain time of day, a telephone pole casts a shadow that forms an angle of $40°$ with the ground. The shadow has length 35 feet. How tall is the telephone pole? (Round answers to the nearest thousandth).

Using Trigonometric Ratios to Find Missing Angle Measures in Right Triangles

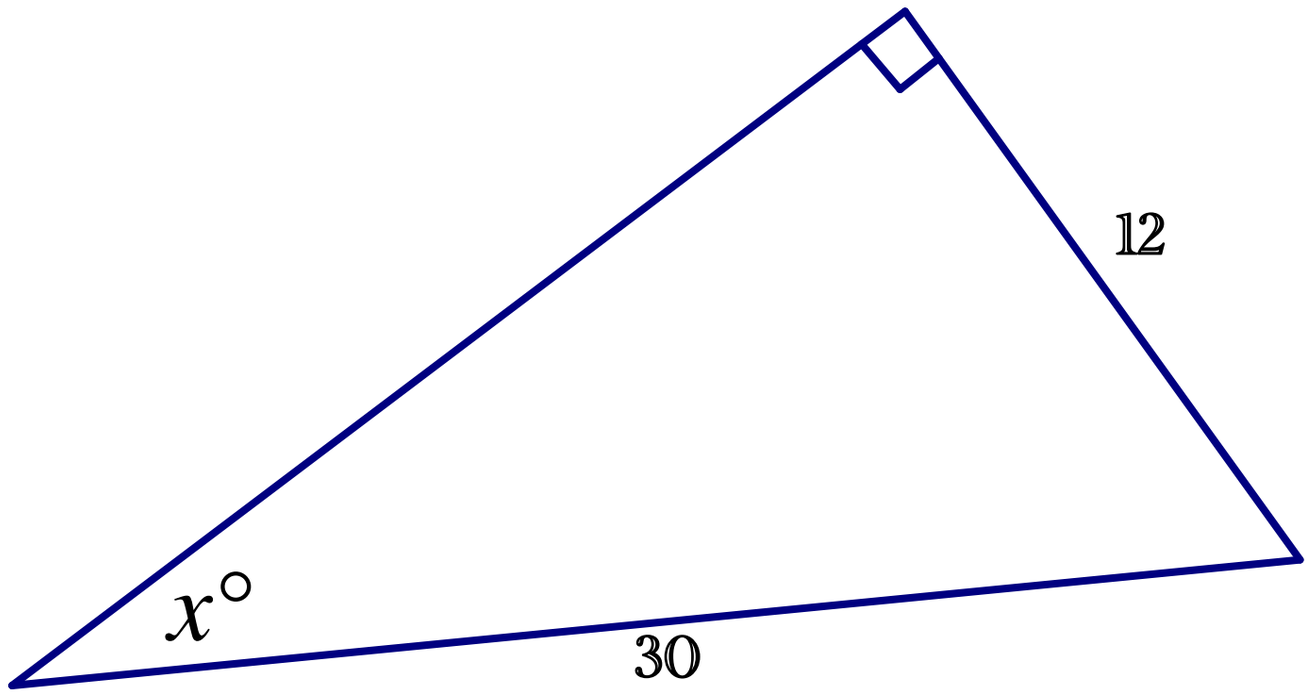
*The inverse trigonometric functions $\sin^{-1}(=\arcsin)$, $\cos^{-1}(=\arccos)$, and $\tan^{-1}(=\arctan)$ can cancel out the original trigonometric function to solve for the angle measure inside of the function.

$$\sin\theta = 0.4962$$

$$\sin^{-1}(\sin\theta) = \sin^{-1}(0.4962)$$

$$\theta = \sin^{-1}(0.4962) \approx 30°$$

Ex. 3: Find the value of x.



Ex. 4: Solve the right triangle described. (*Solving a triangle means to find every missing side length and every missing angle measure.)

$\triangle JKL$, where $\angle J$ is a right angle, KL=19 cm, and KJ=15 cm.

Ex. 5: Solve the right triangle described.

$\triangle MNP$, where $\angle P$ is a right angle, $m\angle M = 66°$, and PN=4 in.