Algebra 2
Unit: Trigonometric Functions
Section: Right Triangle Trigonometry

Example: Identifying Trigonometric Ratios

Problem

Identify the six trigonometric ratios given the following right triangle. Use angle X as your reference angle. Please note it is customary to write a capital letter for all angles and the opposite side to each angle to be denoted by a lower case letter matching the angle.

Solution

The triangle is labeled with Y at the right angle, X and Z at the two acute angles. The sides opposite each angle is labeled with the lower case letter: The side between X and Y is side z. The side between Z and Y is side x. The side between X and Z is side y, which is also the hypotenuse.

Sine of X is defined as the opposite side to the angle X divided by the hypotenuse which equals x divided by y.

Cosine of X is defined as the adjacent side to the angle X divided by the hypotenuse which equals z divided by y.

Tangent of X is defined as the opposite side to the angle X divided by the adjacent side to angle X which equals x divided by z.

Cosecant of x is defined as one divided by sine of x which equals the hypotenuse divided by the opposite side to angle X which equals y divided by x.

Secant of x is defined as one divided by cosine of x which equals the hypotenuse divided by the adjacent side to angle X which equals y divided by z.

Cotangent of x is defined as one divided by tangent of x which equals the adjacent side to angle X divided by the opposite side to angle X which equals z divided by x.