Unit 7 DF

Two triangles are similar if: two sides of the first triangle are proportional to other two sides of the second, with the same ratio. Said this, for us to get the accurate measurement of the lengths of the larger triangle, at least one of the lengths of the larger triangle will be a known which in the hypotenuse of 1. This plane trigonometry depends on the understanding of similar triangles.

We can prove this by Ptolemy's Theorem .

Also the laws of sines and cosines can be derived geometrically.

Calculation of the trigonometric functions depends on the ability to calculate them from specific angles and the use of multiple angle formulae.

Given the side lengths of a right triangle, evaluate the six trigonometric functions of one of the acute angles.

If needed, draw the right triangle and label the angle provided.

Identify the angle, the adjacent side, the side opposite the angle, and the hypotenuse of the right triangle. Abramson, J. (2017)

Find the required function:
Sine as the ratio of the opposite side to the hypotenuse
Cosine as the ratio of the adjacent side to the hypotenuse Tangent as the ratio of the opposite side to the adjacent side Secant as the ratio of the hypotenuse to the adjacent side Cosecant as the ratio of the hypotenuse to the opposite side Cotangent as the ratio of the adjacent side to the opposite side

Given the sine and cosine of an angle, find the sine or cosine of its complement.

To find the sine of the complementary angle, find the cosine of the original angle. To find the cosine of the complementary angle, find the sine of the original angle.

Given a right triangle, the length of one side, and the measure of one acute angle, find the remaining sides.

Abramson, J. (2017)

For each side, select the trigonometric function that has the unknown side as either the numerator or the denominator. The known side will, in turn, be the denominator or the numerator.

Write an equation setting the function value of the known angle equal to the ratio of the corresponding sides.

Using the value of the trigonometric function and the known side length, solve for the missing side length.