Example: Law of Sines

Problem:

Find the length of u in the triangle below. Triangle TUV has angle T with measure 86 degrees and angle V with measure 57 degrees. Side UV has length 75.

Solution:

Before we can use the Law of Sines, we must know angle U, since we want to find side u. We know that the angles in a triangle add up to 180 degrees, so we can simply subtract the other two angles from 180 degrees.

The measure of angle U equals 180 minus 86 minus 57, which equals 37 degrees.

We can now use the Law of Sines to set up ratios of the sine of an angle and its opposite side.

The sine of 86 divided by 75 equals the sine of 37 divided by u.

Cross multiply.

U times the sine of 86 equals 75 times the sine of 37.

Divide by the sine of 86 to solve for u. U equals 75 times the sine of 37 divided by the sine of 86, which is approximately equal to 45.25.