Algebra 2
Unit: Trigonometric Functions
Section: Inverse Trigonometric Values

Example: Solving Right Triangles

Problem

Solve for the missing angle and sides of the following triangle. The right triangle has its right angle labeled C, acute angle B is equal to 62 degrees and acute angle A does not have a measure. Side AC is equal to 22.6 miles.

Solution

The missing sides are BC and BA. The missing angle is A. Notice that we have one missing angle. We know that the sum of three angles of any triangle is equal to one hundred eighty degrees. Angle A plus angle B plus angle C is equal to one hundred eighty degrees. Angle A plus sixty-two degrees plus ninety degrees is equal to one hundred eighty degrees. Angle A is therefore equal to twenty-eight degrees.

To find side BC use the tangent function. Tangent of sixty-two degrees equals twenty-two point six divided by BC. BC is equal to twenty-two point six divided by tangent of sixty-two degrees. BC is approximately twelve point zero two.

We can finally find side AB by using the Pythagorean Theorem. BC squared plus AC squared is equal to AB squared. Twelve point zero two squared plus twenty-two point six squared is equal to AB squared. AB squared is equal to six hundred fifty five point two four. AB is equal to twenty-five point six.