

Answer on Question #42448, Math, Geometry

Problem.

State whether the given measurements determine zero, one, or two triangles.

$$C = 30^\circ, a = 32, c = 16$$

Help me please

Solution.

The Law of Sines gives $\frac{\sin A}{a} = \frac{\sin C}{c} \Rightarrow \sin A = \sin C \frac{a}{c} = 0.5 \frac{32}{16} = 1 \Rightarrow A = 90^\circ$. So, the triangle is right and $B = 90^\circ - C = 60^\circ$.

Then, from the Pythagorean theorem, $b = \sqrt{a^2 - c^2} = \sqrt{32^2 - 16^2} = 16\sqrt{3} \approx 27.7128$.
So, the answer is: one triangle.