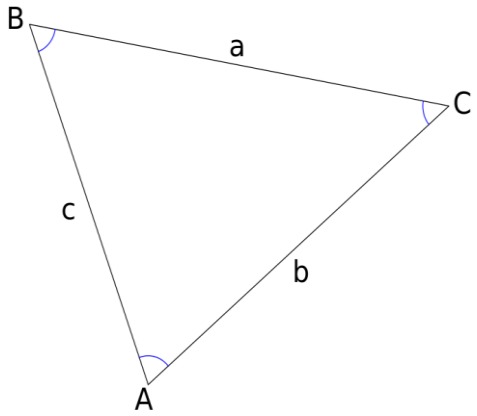
Answer on Question #51807 – Math – Trigonometry

Solve triangle ABC which has angle A=250.251,angle B=600.511 and a=3.82. Find c.

A 3-6cm
B 7.0cm
C 7.4cm
D 8.8cm

Solution



The given values of angles Â and B are unrealistic.

Triangle with such values for angles does not exist, because the sum of interior angles of triangle is equal to 180^0.

You're asked to find c, so let's get angle C from triangle's property:

C = 180^0 - (A + B).

By the law of sines, then use

$\frac{Sin(A)}{a} = \frac{Sin(C)}{c}$,

which gives the expression for c:

$$c = \frac{a \cdot Sin(C)}{Sin(A)} = \frac{a \cdot Sin(180^0 - (\mathrm{A} + \mathrm{B}))}{Sin(A)} = \frac{a \cdot Sin(\ (\mathrm{A} + \mathrm{B}))}{Sin(A)} = \frac{a \cdot (Sin(A)Cos(B) + Cos(A)Sin(B))}{Sin(A)},$$

because $sin(180^0 - \alpha) = sin(\alpha),\ sin(\alpha + \beta) = sin(\alpha)cos(\beta) + cos(\alpha)sin(\beta).$