Question#20645

solve the triangle : BC=1140in, AC=854in, AB=771in

Solution

Using the law of cosines find the angle A:

$$BC^2 = AC^2 + AB^2 - 2 \cdot AC \cdot AB \cdot cos(A);$$

$$\cos(A) = \frac{AC^2 + AB^2 - BC}{2 \cdot AC \cdot AB};$$

$$\cos(A) = \frac{854^2 + 771^2 - 1140^2}{2 \cdot 854 \cdot 771} = 0{,}018344;$$

$$A = 88{,}95°;$$

Next using the law of sines:

$$\frac{BC}{\sin(A)} = \frac{AC}{\sin(B)};$$

$$\sin(B) = \frac{AC \cdot \sin(A)}{BC};$$

$$\sin(B) = \frac{854 \cdot 0{,}9998}{1140} = 0{,}748997;$$

$$B = 48{,}5°$$

And finally the rule of angels of triangles gives us:

$$A + B + C = 180°;$$

$$C = 180° - A - B;$$

$$C = 32{,}55°;$$

Answer:

$A = 88{,}95°; B = 48{,}5°; C = 32{,}55°;$