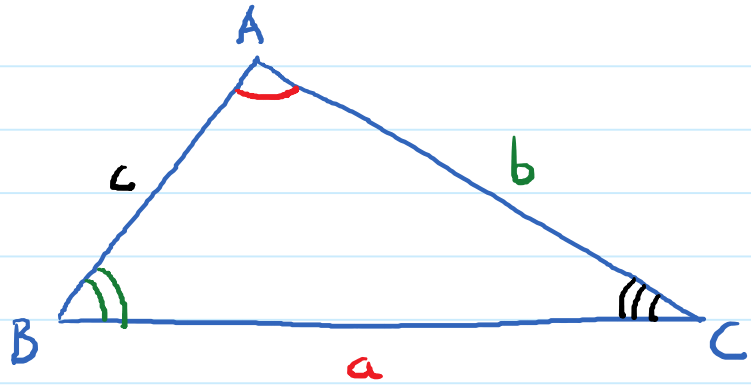
7.3. Law of Cosines

Tuesday, April 30, 2019 8:09 AM



Law of Cosines:

$$a^2 = b^2 + c^2 - 2bc\cos(A)$$

$$b^2 = a^2 + c^2 - 2ac\cos(B)$$

$$c^2 = a^2 + b^2 - 2ab\cos(C)$$

→ get $\cos(A)$ by itself

$2bc\cos(A) = b^2 + c^2 - a^2$

$$\rightarrow \cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

Important Variation

$$\cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos(B) = \frac{a^2 + c^2 - b^2}{2ac}$$

$$\cos(C) = \frac{a^2 + b^2 - c^2}{2ab}$$

Ex 1. SSS triangle

Solve the triangle ABC. Given $a = 42.9$; $b = 37.6$ and $c = 62.7$.

Ex 2. SAS triangle

Solve the triangle ABC. Given $B = 42.3°$; $a = 12.9$; $c = 15.4$.