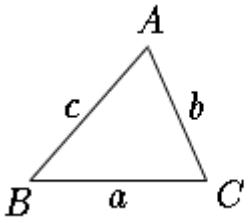
Proving the Law of Cosine

You know that the law of cosines states:



$$a^2 = b^2 + c^2 - 2bc\cos A$$
$$b^2 = c^2 + a^2 - 2ca\cos B$$
$$c^2 = a^2 + b^2 - 2ab\cos C$$

Using your knowledge of triangles, and the diagram below derive the law of cosine.

Don't forget:

- If you prove it for one angle then you can state it to be true for all angles (for the triangle below show that $c^2 = a^2 + b^2 - 2ab\cos C$)
- Use the knowledge that you posses about triangles.
- Keep it SIMPLE.
- Hint: think Pythag and substitution!!!