Prove the following identities:

2. $\sin\theta \sec\theta = \tan\theta$

$\sec\theta = \frac{1}{\cos\theta}$

$\frac{\sin\theta}{\cos\theta} = \tan\theta$

$LHS = \sin\theta\left(\frac{1}{\cos\theta}\right)$

$= \frac{\sin\theta}{\cos\theta}$

$= \tan\theta$ ✓

Prove the following identities:

3. $\sin\theta \tan\theta + \cos\theta = \sec\theta$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\sec\theta = \frac{1}{\cos\theta}$

$\sin^2\theta + \cos^2\theta = 1$

$LHS = \sin\theta\left(\frac{\sin\theta}{\cos\theta}\right) + \cos\theta = \frac{1}{\cos\theta}$ (RHS)

$(\times \cos\theta)$

(LHS) (RHS)

$\Rightarrow \sin^2\theta + \cos^2\theta = 1$

$1 = 1$

$\cos^2\theta = 1 - \sin^2\theta$

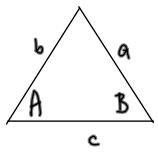
Prove the following identities:

4. $\dfrac{\sin\theta}{\sqrt{1-\sin^2\theta}} = \tan\theta$

$$\text{LHS} = \frac{\sin\theta}{\sqrt{\cos^2\theta}}$$

$$= \frac{\sin\theta}{\cos\theta}$$

$$= \tan\theta$$



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

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

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

Prove the following identities:

Use the *Sine Rule* or *Cosine Rule* to prove the following identities:

21. $c = b\cos A + a\cos B$

$$\text{RHS} = b\left(\frac{b^2+c^2-a^2}{2bc}\right) + a\left(\frac{a^2+c^2-b^2}{2ac}\right)$$

$$= \frac{b^2 + c^2 - a^2 + a^2 + c^2 - b^2}{2c}$$

$$= \frac{2c^2}{2c}$$

$$= c$$

$\Delta = \frac{1}{2} ab \sin C$

Sine Rule

$\frac{\sin A}{a} = \frac{\sin B}{b}$

Prove the following identities:

Show area of Δ is

$\Rightarrow \frac{a^2 \sin B \sin C}{2 \sin A} = \frac{1}{2} ab \sin C$

$\Rightarrow \frac{a \sin B}{\sin A} = b$

$(\div \sin B) \Rightarrow \frac{a}{\sin A} = \frac{b}{\sin B}$ ✓