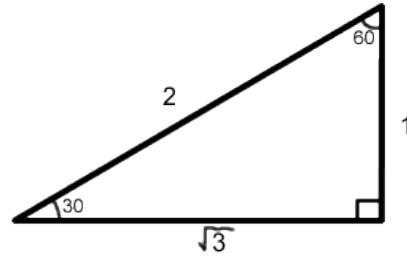


Verify the following identities for $\theta = 30^\circ$



$$\tan 30^\circ = \frac{\sin 30^\circ}{\cos 30^\circ}$$

$$\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$$

$$\frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2} \times \frac{2}{\sqrt{3}}$$

$$\frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\sin 30^\circ = \frac{1}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

Recall that a fraction over a fraction indicates division. When dividing fractions, the first term stays the same, division changes to multiplication, and we flip the second term.

$$1 = \sin^2 30^\circ + \cos^2 30^\circ$$

$$\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\frac{1}{4} + \frac{3}{4}$$

$$\frac{4}{4} = 1$$