

# Double and Half Angle Formulas

$$\sin(2a) = 2 \sin(a) \cos(a)$$

$$\cos(2a) = \cos^2(a) - \sin^2(a)$$

$$\cos(2a) = 2 \cos^2(a) - 1$$

$$\cos(2a) = 1 - 2 \sin^2(a)$$

$$\tan(2a) = \frac{2 \tan(a)}{1 - \tan^2(a)}$$

$$\sin\left(\frac{a}{2}\right) = \pm \sqrt{\frac{(1 - \cos a)}{2}}$$

$$\cos\left(\frac{a}{2}\right) = \pm \sqrt{\frac{(1 + \cos a)}{2}}$$

$$\tan\left(\frac{a}{2}\right) = \frac{1 - \cos a}{\sin a} = \frac{\sin a}{1 + \cos a}$$

Use these formulas to find the values on unknown trig functions