Pythagorean Identities:

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

$\sin^2(\theta) = 1 - \cos^2(\theta)$ $1 + \tan^2(\theta) = \sec^2(\theta)$ $1 + \cot^2(\theta) = \csc^2(\theta)$

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

Even/Oddness Symmetry Identities:

$\sin(-\theta) = -\sin(\theta)$ $\csc(-\theta) = -\csc(\theta)$ [*sin* and *csc* are odd functions]

$\cos(-\theta) = \cos(\theta)$ $\sec(-\theta) = \sec(\theta)$ [*cos* and *sec* are even functions]

$\tan(-\theta) = -\tan(\theta)$ $\cot(-\theta) = -\cot(\theta)$ [*tan* and *cot* are odd functions]

Cofunction Relationships:

$\sin(\theta) = \cos\left(\frac{\pi}{2} - \theta\right)$ $\sec(\theta) = \csc\left(\frac{\pi}{2} - \theta\right)$ $\tan(\theta) = \cot\left(\frac{\pi}{2} - \theta\right)$

Sum and Difference formulas:

$\sin(A+B) = \sin(A)\cos(B) + \cos(A)\sin(B)$

$\sin(A-B) = \sin(A)\cos(B) - \cos(A)\sin(B)$

$$\tan(A+B) = \frac{\tan(A) + \tan(B)}{1 - \tan(A)\tan(B)}$$

$\cos(A+B) = \cos(A)\cos(B) - \sin(A)\sin(B)$

$\cos(A-B) = \cos(A)\cos(B) + \sin(A)\sin(B)$

$$\tan(A-B) = \frac{\tan(A) - \tan(B)}{1 + \tan(A)\tan(B)}$$

Double Angle Formulas:	Half Angle Formulas:
$\sin(2\theta) = 2\sin(\theta)\cos(\theta)$	$\sin^2(\theta) = \frac{1-\cos(2\theta)}{2}$ or $\sin\left(\frac{\alpha}{2}\right) = \pm\sqrt{\frac{1-\cos(\alpha)}{2}}$
$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta)$ $= 1 - 2\sin^2(\theta)$ $= 2\cos^2(\theta) - 1$	$\cos^2(\theta) = \frac{1+\cos(2\theta)}{2}$ or $\cos\left(\frac{\alpha}{2}\right) = \pm\sqrt{\frac{1+\cos(\alpha)}{2}}$
$\tan(2\theta) = \frac{2\tan(\theta)}{1 - \tan^2(\theta)}$	$\tan\left(\frac{\alpha}{2}\right) = \pm\sqrt{\frac{1-\cos(\alpha)}{1-\cos(\alpha)}} = \frac{\sin(\alpha)}{1+\cos(\alpha)} = \frac{1-\cos(\alpha)}{\sin(\alpha)}$
	[In all of the above, ($\pm$) determined by quad of $\frac{\alpha}{2}$]