

### Reciprocal Identities

$$\csc \theta = 1/\sin \theta$$

$$\sec \theta = 1/\cos \theta$$

$$\cot \theta = 1/\tan \theta$$

### Pythagorean Identities

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

$$\sec^2 \theta = 1 + \tan^2 \theta$$

$$\csc^2 \theta = 1 + \cot^2 \theta$$

### Addition & Subtraction Formulas

$$\sin(\alpha \pm \beta) = \sin(\alpha) \cos(\beta) \pm \sin(\beta) \cos(\alpha)$$

$$\cos(\alpha \pm \beta) = \cos(\alpha) \cos(\beta) \mp \sin(\beta) \sin(\alpha)$$

$$\tan(\alpha \pm \beta) = \frac{\tan(\alpha) \pm \tan(\beta)}{1 \mp \tan(\alpha) \tan(\beta)}$$

### Corelated Angle Identities

$$\sin(\pi/2 \pm \theta) = \cos(\theta)$$

$$\cos(\pi/2 \pm \theta) = \mp \sin(\theta)$$

$$\tan(\pi/2 \pm \theta) = \mp \cot(\theta)$$

$$\sin(3\pi/2 \pm \theta) = -\cos(\theta)$$

$$\cos(3\pi/2 \pm \theta) = \pm \sin(\theta)$$

$$\tan(3\pi/2 \pm \theta) = \mp \cot(\theta)$$

### Double Angle Formulas

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

$$\begin{aligned} \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\ &= 2 \cos^2(\theta) - 1 \\ &= 1 - 2 \sin^2(\theta) \end{aligned}$$

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

### Quotient Identities

$$\tan \theta = \sin \theta / \cos \theta$$

$$\cot \theta = \cos \theta / \sin \theta$$

### Related Angle Identities

$$\sin(\pi \mp \theta) = \pm \sin(\theta)$$

$$\cos(\pi \mp \theta) = -\cos(\theta)$$

$$\tan(\pi \mp \theta) = \mp \tan(\theta)$$

$$\sin(2\pi - \theta) = -\sin(\theta)$$

$$\cos(2\pi - \theta) = \cos(\theta)$$

$$\tan(2\pi - \theta) = -\tan(\theta)$$

$$\sin(-\theta) = -\sin(\theta)$$

$$\cos(-\theta) = \cos(\theta)$$

$$\tan(-\theta) = -\tan(\theta)$$

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Page 1 of 1.

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