

Cheatography

Algebra II Final Cheat Sheet by respinoza2 via cheatography.com/21804/cs/4298/

Identities

$$\csc \theta = \frac{1}{\sin \theta}$$

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

$$\cot \theta = \frac{1}{\tan \theta}$$

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

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

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

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

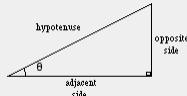
$$1 + \cot^2 \theta = \csc^2 \theta$$

SOH CAH TOA

$$\text{SOH } \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\text{CAH } \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\text{TOA } \tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$



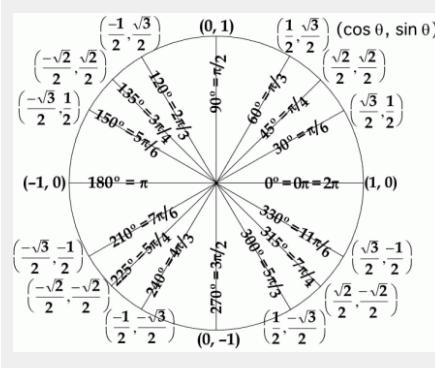
This is used to find exact cosines, tangents, or sines of angles.

Exponential and Logarithmic

$$\text{Exponential} = b^x$$

$$\text{Logarithmic} = \ln x$$

The Unit Circle



Double Angle Identities

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

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

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

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

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

Product-Sum Identities

$$\sin \alpha + \sin \beta = 2 \sin \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2}$$

$$\sin \alpha - \sin \beta = 2 \cos \frac{\alpha + \beta}{2} \sin \frac{\alpha - \beta}{2}$$

$$\cos \alpha + \cos \beta = 2 \cos \frac{\alpha + \beta}{2} \cos \frac{\alpha - \beta}{2}$$

$$\cos \alpha - \cos \beta = -2 \sin \frac{\alpha + \beta}{2} \sin \frac{\alpha - \beta}{2}$$

Half-Angle Identities

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

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

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

Sum and Difference Identities

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

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

$$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$$

$$\tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$\tan(\alpha - \beta) = \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$$



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