Trig Identities.md 2/21/2023

Trigonometric Identities

Pythagorean Identities

$$\sin^2 \theta + \cos^2 \theta = 1$$
$$\tan^2 \theta + 1 = \sec^2 \theta$$
$$\cot^2 \theta + 1 = \langle \csc^2 \theta \rangle$$

Addition and Subtraction Identities

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

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

Double Angle Identities

$$egin{aligned} \sin(2 heta) &= 2\sin heta\cos heta \ \cos(2 heta) &= \cos^2 heta - \sin^2 heta \ \tan(2 heta) &= rac{2 an heta}{1- an^2 heta} \end{aligned}$$

Negative Angle Identities

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

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

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

$$\csc(-\theta) = -\csc\theta$$

$$\sec(-\theta) = \sec\theta$$

$$\cot(-\theta) = -\cot\theta$$