

Trigonometry All Formulas

Handmade Pencil Style Notes

Basic Ratios

- $\sin \theta = \text{Perpendicular} / \text{Hypotenuse}$
 - $\cos \theta = \text{Base} / \text{Hypotenuse}$
 - $\tan \theta = \text{Perpendicular} / \text{Base}$
 - $\text{cosec } \theta = \text{Hypotenuse} / \text{Perpendicular}$
 - $\sec \theta = \text{Hypotenuse} / \text{Base}$
 - $\cot \theta = \text{Base} / \text{Perpendicular}$
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Reciprocal Formulas

- $\sin \theta \times \text{cosec } \theta = 1$
 - $\cos \theta \times \sec \theta = 1$
 - $\tan \theta \times \cot \theta = 1$
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Pythagorean Identities

- $\sin^2 \theta + \cos^2 \theta = 1$
 - $1 + \tan^2 \theta = \sec^2 \theta$
 - $1 + \cot^2 \theta = \text{cosec}^2 \theta$
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Angle Transformation

- $\sin(90^\circ - \theta) = \cos \theta$

- $\cos(90^\circ - \theta) = \sin \theta$
 - $\tan(90^\circ - \theta) = \cot \theta$
 - $\cot(90^\circ - \theta) = \tan \theta$
 - $\sec(90^\circ - \theta) = \operatorname{cosec} \theta$
 - $\operatorname{cosec}(90^\circ - \theta) = \sec \theta$
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Standard Values

- $\sin 0^\circ = 0$
- $\sin 30^\circ = 1/2$
- $\sin 45^\circ = 1/\sqrt{2}$
- $\sin 60^\circ = \sqrt{3}/2$
- $\sin 90^\circ = 1$
- $\cos 0^\circ = 1$
- $\cos 30^\circ = \sqrt{3}/2$
- $\cos 45^\circ = 1/\sqrt{2}$
- $\cos 60^\circ = 1/2$
- $\cos 90^\circ = 0$