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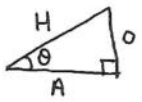
TRIGONOMETRY



$\sin\theta = \frac{O}{H}$ $\quad \operatorname{cosec}\theta = \frac{1}{\sin\theta}$

$\cos\theta = \frac{A}{H}$ $\quad \sec\theta = \frac{1}{\cos\theta}$

$\tan\theta = \frac{O}{A} = \frac{\sin\theta}{\cos\theta}$ $\quad \cot\theta = \frac{1}{\tan\theta} = \frac{\cos\theta}{\sin\theta}$

Negative Angle

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

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

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

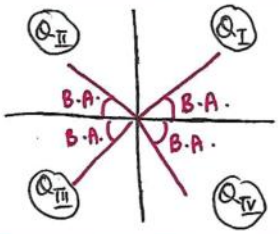
Special Angle

	30°	45°	60°
Sin	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$

$\sin(90°-\theta) = \cos\theta$

$\cos(90°-\theta) = \sin\theta$

$\tan(90°-\theta) = \cot\theta$



Quadrant & Basic Angle

(Q) (B.A)

Basic Trigo. Identities

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

Double Angle Formulae

- $\sin 2\theta = 2\sin\theta\cos\theta$
- $\cos 2\theta = \cos^2\theta - \sin^2\theta$
  $= 2\cos^2\theta - 1$
  $= 1 - 2\sin^2\theta$
- $\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$

Compound Angle Formulae

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

The Substitution $t = \tan\frac{\theta}{2}$

- $\tan\theta = \frac{2t}{1-t^2}$
- $\sin\theta = \frac{2t}{1+t^2}$
- $\cos\theta = \frac{1-t^2}{1+t^2}$

Factor Formulae

$\sin(A+B) + \sin(A-B) = 2\sin A\cos B$ $\quad \sin P + \sin Q = 2\sin\left(\frac{P+Q}{2}\right)\cos\left(\frac{P-Q}{2}\right)$

$\sin(A+B) - \sin(A-B) = 2\cos A\sin B$ $\quad \sin P - \sin Q = 2\cos\left(\frac{P+Q}{2}\right)\sin\left(\frac{P-Q}{2}\right)$

$\cos(A+B) + \cos(A-B) = 2\cos A\cos B$ $\quad \cos P + \cos Q = 2\cos\left(\frac{P+Q}{2}\right)\cos\left(\frac{P-Q}{2}\right)$

$\cos(A+B) - \cos(A-B) = -2\sin A\sin B$ $\quad \cos P - \cos Q = -2\sin\left(\frac{P+Q}{2}\right)\sin\left(\frac{P-Q}{2}\right)$

Graphs