

TRIGONOMETRIC RATIOS

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

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

$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$\cos(A-B) = \cos A \cos B + \sin A \sin B$$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

$$\tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

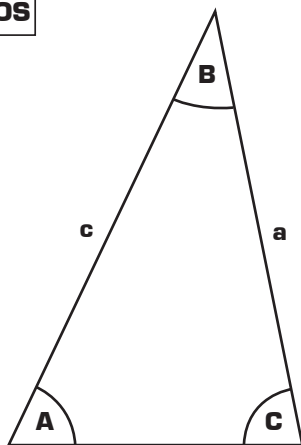
$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

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

$$\cos^2 \theta - \sin^2 \theta = \cos 2\theta$$

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

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



TRIGONOMETRIC RATIOS

Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Law of Cosines

$$a^2 = b^2 + c^2 - 2bc(\cos A)$$

$$b^2 = a^2 + c^2 - 2ac(\cos B)$$

$$c^2 = a^2 + b^2 - 2ab(\cos C)$$

Law of Tangents

$$\frac{a-b}{a+b} = \frac{\tan \frac{1}{2}(A-B)}{\tan \frac{1}{2}(A+B)}$$

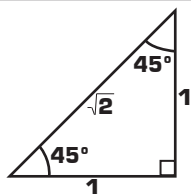
$$\frac{b-c}{b+c} = \frac{\tan \frac{1}{2}(B-C)}{\tan \frac{1}{2}(B+C)}$$

$$\frac{c-a}{c+a} = \frac{\tan \frac{1}{2}(C-A)}{\tan \frac{1}{2}(C+A)}$$

REVIEW ONLY

School Datebooks

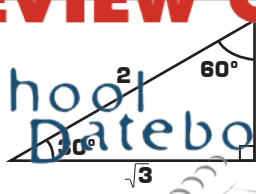
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$$\sin 45^\circ = \frac{1}{\sqrt{2}}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}}$$

$$\tan 45^\circ = 1$$



$$\sin 30^\circ = \frac{1}{2}$$

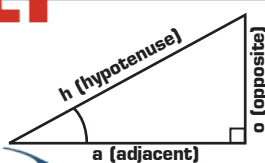
$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 60^\circ = \frac{1}{2}$$

$$\tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\tan 60^\circ = \sqrt{3}$$



$$\sin \theta = \frac{o \text{ (opposite)}}{h \text{ (hypotenuse)}} = \frac{1}{\csc \theta}$$

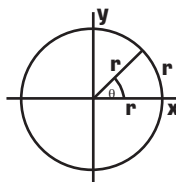
$$\cos \theta = \frac{a \text{ (adjacent)}}{h \text{ (hypotenuse)}} = \frac{1}{\sec \theta}$$

$$\tan \theta = \frac{o \text{ (opposite)}}{a \text{ (adjacent)}} = \frac{1}{\cot \theta}$$

VALUES OF TRIGONOMETRIC RATIOS

θ	0	$\pi/2$	π	$3\pi/2$	2π
$\sin \theta$	0	1	0	-1	0
$\cos \theta$	1	0	-1	0	1
$\tan \theta$ <small>(\sin/\cos)</small>	0	∞	0	$-\infty$	0
$\sec \theta$ <small>($1/\cos$)</small>	1	∞	-1	∞	1
$\csc \theta$ <small>($1/\sin$)</small>	∞	1	∞	-1	∞
$\cot \theta$ <small>($1/\tan$)</small>	∞	0	$-\infty$	0	∞

note: ∞ denotes undefined or infinite



$$\theta = 1 \text{ radian}$$

$$\pi \text{ radians} = 180^\circ$$

$$2\pi \text{ radians} = 360^\circ$$

QUADRANTS

