TRIGONOMETRY

Associated Angles

How to find sin $960°$, ***cos*** $960°$, ***tan*** $960°$ ***etc***.?

(i)*Find out the quadrant.*

(ii)*If n is even multiple of* $\frac{\pi}{2}$ *, then the t*

$-$ *ratio will be same as given otherwise the t*

$-$ *ratio will be its compliment.*

N. B. : *The rotation must be ACW always.*

sin	All
tan	cos

Compound Angles

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

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

(3) $\sin(A + B)\sin(A - B) = (\sin A)^2 - (\sin B)^2 = (\cos B)^2 - (\cos A)^2$

(4) $\cos(A + B)\ \cos(A - B) = (\cos A)^2 - (\sin B)^2 = (\cos B)^2 - (\sin A)^2$

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

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

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

Transformation of Sum and Products

(1) $\sin C + \sin D = 2sin\frac{C+D}{2}cos\frac{C-D}{2}$

(2) $\sin C - \sin D = 2cos\frac{C+D}{2}sin\frac{C-D}{2}$

(3) $\cos C + \cos D = 2cos\frac{C+D}{2}cos\frac{C-D}{2}$

(4) $\cos C - \cos D = 2sin\frac{C+D}{2}sin\frac{D-C}{2}$

(5) $2\sin A \cos B = \sin(A + B) + \sin(A - B)$

(6) $2\cos A \sin B = \sin(A + B) - \sin(A - B)$

(7) $2\cos A \cos B = \cos(A + B) + \cos(A - B)$

(8) $2\sin A \sin B = \cos(A - B) - \cos(A + B)$

Multiple Angles

(1) $\sin 2A = 2\sin A \cos A = \frac{2\tan A}{1+\tan^2 A}$

(2) $\cos 2A = \cos^2 A - \sin^2 A = 2\cos^2 A - 1 = 1 - 2\sin^2 A = \frac{1-\tan^2 A}{1+\tan^2 A}$

(3) $\tan^2 A = \frac{1-\cos 2A}{1+\cos 2A}$

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

(5) $\tan A = \frac{1-\cos 2A}{\sin 2A} = \frac{\sin 2A}{1+\cos 2A}$

(6) $\sin 3A = 3\sin A - 4\sin^3 A$