

I) Recall (Bachpan wali Feeling)

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

II) Degree and Radian

$$\boxed{\pi^\circ = 180^\circ}$$

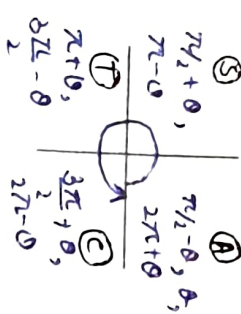
- Radian Measure = $\frac{\pi}{180}$ x Degree Measure
- Degree Measure = $\frac{180}{\pi}$ x Radian Measure



$$\boxed{R = r\theta}$$

Note: - θ is in Radian

III) Quadrant System



- ①: All Trigonometric Functions
- ②: Sin and cosec
- ③: Tan and cot
- ④: Cos and sec

IV) Value of Any Angle

- ① $\frac{\pi}{2}$ x odd multiple $\Rightarrow \sin \leftrightarrow \cos, \tan \leftrightarrow \cot, \csc \leftrightarrow \sec$
- ② $\frac{\pi}{2}$ x even multiple $\Rightarrow$ T-function: same

- ③ Check the quadrant for the sign as per the original function

Sin and Cos ki Kahani

Sin ☺ Friendly, Loyal, Accomodating

Cos ☹ Stubborn, Angry, Non-Accomodating

- ① $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
- ② $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

Preview from Notesale.co.uk Page 1 of 2

V) Double Angle Formulae

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

$$\textcircled{2} \cot(A \pm B) = \frac{\cot A \cot B \mp 1}{\cot A \pm \cot B}$$

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

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

VI) Triple Angle Formulae

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

VII) Sum and Difference Angle Formulae

$$\textcircled{1} \sin 3A = 3 \sin A - 4 \sin^3 A \quad \textcircled{2} \tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A}$$

$$\textcircled{3} \cos 3A = 4 \cos^3 A - 3 \cos A$$

VIII) C and D Formulae

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

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

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

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

IX) Naam Kya Da?

$$\textcircled{1} 2 \sin A \cos B = \sin(A+B) + \sin(A-B)$$

$$\textcircled{2} 2 \cos A \sin B = \sin(A+B) - \sin(A-B)$$

$$\textcircled{3} 2 \cos A \cos B = \cos(A+B) + \cos(A-B)$$

$$\textcircled{4} -2 \sin A \sin B = \cos(A+B) - \cos(A-B)$$

Imp Result

$$\textcircled{1} \sin(A+B) \cdot \sin(A-B) = \sin^2 A - \sin^2 B$$

$$= \cos^2 B - \cos^2 A$$

$$\textcircled{2} \cos(A+B) \cdot \cos(A-B) = \cos^2 A - \sin^2 B$$

$$= \cos^2 B - \sin^2 A$$

$$\textcircled{3} \sin 60^\circ \cdot \sin 30^\circ = \frac{1}{4}$$