

FORMULAE- TRIGONOMETRY

ADD:- SAINI PLAZA, NEAR BIG SHIV MURTI& ANDHRA BANK,

OPP. H-BLOCK, PALAM VIHAR, GURGAON.

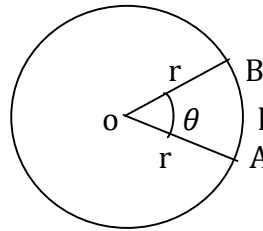
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T-1

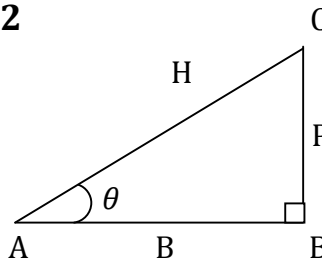
1. Angle = $\frac{\text{Arc}}{\text{Radius}}$
 $\theta = \frac{l}{r}$ (radian)



2. $180^\circ = \pi$ radian

1. $\sin\theta = \frac{P}{H}$	4. $\text{Cosec}\theta = \frac{H}{P}$
2. $\cos\theta = \frac{B}{H}$	5. $\sec\theta = \frac{H}{B}$
3. $\tan\theta = \frac{P}{B}$	6. $\cot\theta = \frac{B}{P}$

T-2



Some people have curly brown hairs through proper brushing.

OR

Pandit Badriprasad har har bole, sona chandi tole.

S	C	T
P	B	P
H	H	B

$S \equiv \sin\theta$

$C \equiv \cos\theta$

$T \equiv \cot\theta$

T-3

1. $\sin\theta = \frac{1}{\text{Cosec}\theta}$	4. $\text{Cosec}\theta = \frac{1}{\sin\theta}$
2. $\cos\theta = \frac{1}{\sec\theta}$	5. $\sec\theta = \frac{1}{\cos\theta}$
3. $\tan\theta = \frac{1}{\cot\theta}$	6. $\cot\theta = \frac{1}{\tan\theta}$

T-4

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

OR

$\sin^2\theta = (1 - \cos^2\theta)$

OR

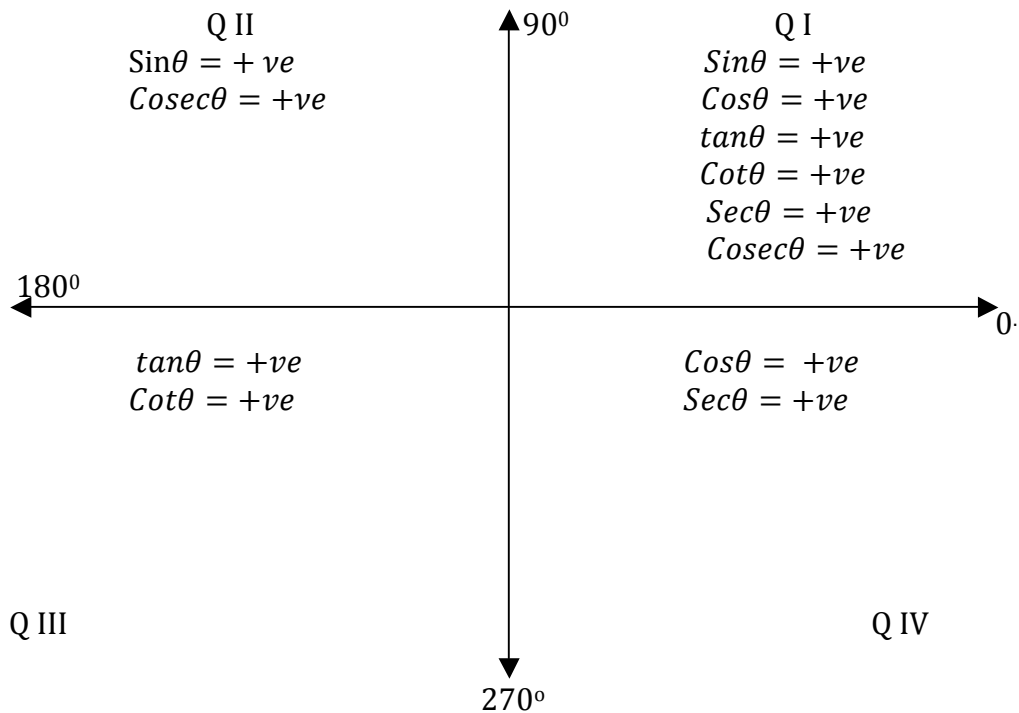
$\cos^2\theta = (1 - \sin^2\theta)$

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

3. $1 + \cot^2\theta = \operatorname{cosec}^2\theta$

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

5. $\cot\theta = \frac{\cos\theta}{\sin\theta}$



Add Sugar To Coffee

A S T C

A \equiv All trigonometric ratios are positive in QI

S \equiv $\sin\theta$ & $\operatorname{cosec}\theta$ are positive in QII

T \equiv $\tan\theta$ & $\cot\theta$ are positive in QIII

C \equiv $\cos\theta$ & $\sec\theta$ are positive in QIV

T-5

1. $\sin(90^\circ - \theta) = \cos\theta$
2. $\cos(90^\circ - \theta) = \sin\theta$
3. $\tan(90^\circ - \theta) = \cot\theta$
4. $\cot(90^\circ - \theta) = \tan\theta$
5. $\sec(90^\circ - \theta) = \operatorname{cosec}\theta$
6. $\operatorname{cosec}(90^\circ - \theta) = \sec\theta$

T-6

1. $\sin(90^\circ + \theta) = +\cos\theta$
2. $\cos(90^\circ + \theta) = -\sin\theta$
3. $\tan(90^\circ + \theta) = -\cot\theta$
4. $\cot(90^\circ + \theta) = -\tan\theta$
5. $\sec(90^\circ + \theta) = -\operatorname{cosec}\theta$
6. $\operatorname{cosec}(90^\circ + \theta) = +\sec\theta$

T-7

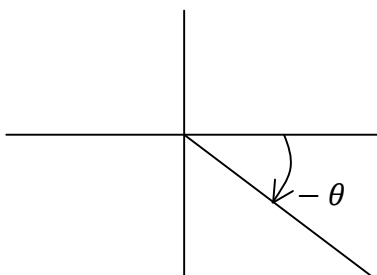
1. $\text{Sin}(180^\circ - \theta) = + \text{Sin}\theta$
2. $\text{Cos}(180^\circ - \theta) = - \text{Cos}\theta$
3. $\text{tan}(180^\circ - \theta) = - \text{tan}\theta$
4. $\text{Cot}(180^\circ - \theta) = - \text{Cot}\theta$
5. $\text{Sec}(180^\circ - \theta) = - \text{Sec}\theta$
6. $\text{Cosec}(180^\circ - \theta) = + \text{Cosec}\theta$

T-8

1. $\text{Sin}(180^\circ + \theta) = - \text{Sin}\theta$
2. $\text{Cos}(180^\circ + \theta) = - \text{Cos}\theta$
3. $\text{tan}(180^\circ + \theta) = + \text{tan}\theta$
4. $\text{Cot}(180^\circ + \theta) = + \text{Cot}\theta$
5. $\text{Sec}(180^\circ + \theta) = - \text{Sec}\theta$
6. $\text{Cosec}(180^\circ + \theta) = - \text{Cosec}\theta$

T-9

1. $\text{Sin}(-\theta) = - \text{Sin}\theta$
2. $\text{Cos}(-\theta) = + \text{Cos}\theta$
3. $\text{tan}(-\theta) = - \text{tan}\theta$
4. $\text{Cot}(-\theta) = - \text{Cot}\theta$
5. $\text{Sec}(-\theta) = + \text{Sec}\theta$
6. $\text{Cosec}(-\theta) = - \text{Cosec}\theta$



Note:- $\text{Sin}(2n\pi + \theta) = \text{Sin}\theta$
 $\text{Cos}(2n\pi + \theta) = \text{Cos}\theta$
 $\text{tan}(2n\pi + \theta) = \text{tan}\theta$

T-10

1. $\text{Sin}(A + B) = \text{Sin}A \text{Cos}B + \text{Cos}A \text{Sin}B$
2. $\text{Sin}(A - B) = \text{Sin}A \text{Cos}B - \text{Cos}A \text{Sin}B$
3. $\text{Cos}(A + B) = \text{Cos}A \text{Cos}B - \text{Sin}A \text{Sin}B$
4. $\text{Cos}(A - B) = \text{Cos}A \text{Cos}B + \text{Sin}A \text{Sin}B$
5. $\text{tan}(A + B) = \frac{\text{tan}A + \text{tan}B}{1 - \text{tan}A \text{tan}B}$
6. $\text{tan}(A - B) = \frac{\text{tan}A - \text{tan}B}{1 + \text{tan}A \text{tan}B}$
7. $\text{Cot}(A + B) = \frac{\text{Cot}A \text{Cot}B - 1}{\text{Cot}B + \text{Cot}A}$
8. $\text{Cot}(A - B) = \frac{\text{Cot}A \text{Cot}B + 1}{\text{Cot}B - \text{Cot}A}$

T-11

1. $2\sin A \cos B = \sin(A + B) + \sin(A - B)$
2. $2\cos A \sin B = \sin(A + B) - \sin(A - B)$
3. $2\cos A \cos B = \cos(A + B) + \cos(A - B)$
4. $2\sin A \sin B = \cos(A - B) - \cos(A + B)$

T-12

1. $\sin A + \sin B = 2\sin \frac{(A+B)}{2} \cdot \cos \frac{(A-B)}{2}$
2. $\sin A - \sin B = 2\cos \frac{(A+B)}{2} \cdot \sin \frac{(A-B)}{2}$
3. $\cos A + \cos B = 2\cos \frac{(A+B)}{2} \cdot \cos \frac{(A-B)}{2}$
4. $\cos A - \cos B = -2\sin \frac{(A+B)}{2} \cdot \sin \frac{(A-B)}{2}$

T-13

1. $\sin 2x = 2\sin x \cos x$
2. $\sin 2x = \frac{2\tan x}{1+\tan^2 x}$
3. $\cos 2x = \cos^2 x - \sin^2 x$
4. $\cos 2x = 2\cos^2 x - 1$
5. $\cos 2x = 1 - 2\sin^2 x$
6. $\cos 2x = \frac{1-\tan^2 x}{1+\tan^2 x}$
7. $\tan 2x = \frac{2\tan x}{1-\tan^2 x}$
8. $\sin 3x = 3\sin x - 4\sin^3 x$
9. $\cos 3x = 4\cos^3 x - 3\cos x$
10. $\tan 3x = \frac{3\tan x - \tan^3 x}{1-3\tan^2 x}$

T-14 (Half Angle Formulae)

1. $\sin x = 2\sin \frac{x}{2} \cos \frac{x}{2}$
2. $\sin x = \frac{2\tan \frac{x}{2}}{1+\tan^2 \frac{x}{2}}$
3. $\cos x = \cos^2 \frac{x}{2} - \sin^2 \frac{x}{2}$
4. $\cos x = \cos^2 \frac{x}{2} - 1$
5. $\cos x = 1 - 2\sin^2 \frac{x}{2}$
6. $\cos x = \frac{1-\tan^2 \frac{x}{2}}{1+\tan^2 \frac{x}{2}}$
7. $\tan x = \frac{2\tan \frac{x}{2}}{1-\tan^2 \frac{x}{2}}$