TURBO

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TRIGONOMETRIC EQUATIONS

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
		GENERAL SOLUTIONS	
1	$\sin\theta = 0$	$\theta = n\pi$	$n \in \mathbb{Z}$
2	$\cos\theta = 0$	$\theta = (2n+1)\pi/2$	$n \in \mathbb{Z}$
3	$\tan\theta = 0$	$\theta = n\pi$	$n \in \mathbb{Z}$
4	$\sin\theta = a$	$\theta = n\pi + (-1)^n \sin^{-1} a$	Valid for $-1 \le a \le 1$.
5	$\cos\theta = a$	$\theta = 2n\pi \pm \cos^{-1} a$	Valid for $-1 \le a \le 1$.
6	$\tan\theta = a$	$\theta = n\pi + \tan^{-1} a$	Valid for $a \in \mathbb{R}$.
		PRINCIPAL VALUES	
7	Range of $\sin^{-1} x$	$[-\pi/2, \pi/2]$	Principal branch.
8	Range of $\cos^{-1} x$	$[0, \pi]$	Principal branch.
9	Range of $\tan^{-1} x$	$(-\pi/2, \pi/2)$	Principal branch.
		TRANSFORMATIONS	
10	Compound Angles	$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$ $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$ $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$	Sum and difference formulas.
11	Double Angles	$\sin 2A = 2 \sin A \cos A$ $\cos 2A = \cos^2 A - \sin^2 A$ $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$	Multiple angle relations.