

Concepts and Formulas

Trigonometric Functions

Trigonometric Ratios of Standard Angles:

Angles(In Degrees)	0°	30°	45°	60°	90°	180°	270°	360°
Angles(In radians)	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
Sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0
Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0	-1	0	1
Tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not Defined	0	Not Defined	1
Cot	Not Defined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0	Not Defined	0	Not Defined
Csc	Not Defined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1	Not Defined	-1	Not Defined
Sec	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Not Defined	-1	Not Defined	1

Trigonometric Functions in Different Domains and Ranges

Trigonometric Functions	Domain	Range
Sin x	\mathbb{R}	$-1 \leq \sin x \leq 1$
Cos x	\mathbb{R}	$-1 \leq \cos x \leq 1$
Tan x	$\mathbb{R} - \{(2n + 1)\pi/2, n \in \mathbb{I}\}$	\mathbb{R}
Cosec x	$\mathbb{R} - \{(n\pi), n \in \mathbb{I}\}$	$\mathbb{R} - \{x : -1 < x < 1\}$
Sec x	$\mathbb{R} - \{(2n + 1)\pi/2, n \in \mathbb{I}\}$	$\mathbb{R} - \{x : -1 < x < 1\}$
Cot x	$\mathbb{R} - \{(n\pi), n \in \mathbb{I}\}$	\mathbb{R}