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Trigonometry Ratios, Reciprocal and Pythagorean Identities Formulas

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List of 24 Trigonometry Ratios, Reciprocal and Pythagorean Identities Formulas

Trigonometry Ratios, Reciprocal and Pythagorean Identities

Pythagorean Identities

1) Cos A given Sin A

$$\text{fx } \cos A = \sqrt{1 - (\sin A)^2}$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

$$\text{ex } 0.940425 = \sqrt{1 - (0.34)^2}$$

2) Cosec A given Cot A

$$\text{fx } \operatorname{cosec} A = \sqrt{1 + (\cot A)^2}$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\)](#)

$$\text{ex } 2.926175 = \sqrt{1 + (2.75)^2}$$

3) Cot A given Cosec A

$$\text{fx } \cot A = \sqrt{(\operatorname{cosec} A)^2 - 1}$$

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d_img.jpg\)](#)

$$\text{ex } 2.743429 = \sqrt{(2.92)^2 - 1}$$



4) Sec A given Tan A 

$$\text{fx } \sec A = \sqrt{1 + (\tan A)^2}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 1.062826 = \sqrt{1 + (0.36)^2}$$

5) Sin A given Cos A 

$$\text{fx } \sin A = \sqrt{1 - (\cos A)^2}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 0.341174 = \sqrt{1 - (0.94)^2}$$

6) Tan A given Sec A 

$$\text{fx } \tan A = \sqrt{(\sec A)^2 - 1}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 0.351568 = \sqrt{(1.06)^2 - 1}$$


Reciprocal Identities 7) Cos A given Sec A 

$$\text{fx } \cos A = \frac{1}{\sec A}$$

[Open Calculator !\[\]\(84f47badaad7772cd95667a7c387a639_img.jpg\)](#)

$$\text{ex } 0.943396 = \frac{1}{1.06}$$



8) Cosec A given Sin A 

$$\text{fx } \operatorname{cosec} A = \frac{1}{\sin A}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$\text{ex } 2.941176 = \frac{1}{0.34}$$

9) Cot A given Tan A 

$$\text{fx } \cot A = \frac{1}{\tan A}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)


$$\text{ex } 2.777778 = \frac{1}{0.36}$$

10) Sec A given Cos A 

$$\text{fx } \sec A = \frac{1}{\cos A}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$\text{ex } 1.06383 = \frac{1}{0.94}$$


11) Sin A given Cosec A 

$$\text{fx } \sin A = \frac{1}{\operatorname{cosec} A}$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$\text{ex } 0.342466 = \frac{1}{2.92}$$



12) Tan A given Cot A 

$$\text{fx } \tan A = \frac{1}{\cot A}$$

Open Calculator 

$$\text{ex } 0.363636 = \frac{1}{2.75}$$

Trigonometry Ratios 13) Adjacent Side of Angle Alpha given Cos Alpha 

$$\text{fx } S_{\text{Adjacent}} = S_{\text{Hypotenuse}} \cdot \cos(\alpha)$$

Open Calculator 

$$\text{ex } 3.009075\text{m} = 5\text{m} \cdot \cos(53^\circ)$$

14) Adjacent Side of Angle Alpha given Tan Alpha 

$$\text{fx } S_{\text{Adjacent}} = \frac{S_{\text{Opposite}}}{\tan(\alpha)}$$

Open Calculator 

$$\text{ex } 3.014216\text{m} = \frac{4\text{m}}{\tan(53^\circ)}$$

15) Cos Alpha 

$$\text{fx } \cos \alpha = \frac{S_{\text{Adjacent}}}{S_{\text{Hypotenuse}}}$$

Open Calculator 

$$\text{ex } 0.6 = \frac{3\text{m}}{5\text{m}}$$



16) Cosec Alpha 

$$\text{fx } \operatorname{cosec} \alpha = \frac{S_{\text{Hypotenuse}}}{S_{\text{Opposite}}}$$

Open Calculator 

$$\text{ex } 1.25 = \frac{5\text{m}}{4\text{m}}$$

17) Cot Alpha 

$$\text{fx } \cot \alpha = \frac{S_{\text{Adjacent}}}{S_{\text{Opposite}}}$$

Open Calculator 

$$\text{ex } 0.75 = \frac{3\text{m}}{4\text{m}}$$

18) Hypotenuse of Right Angle Triangle given Cos Alpha 

$$\text{fx } S_{\text{Hypotenuse}} = \frac{S_{\text{Adjacent}}}{\cos(\alpha)}$$

Open Calculator 

$$\text{ex } 4.98492\text{m} = \frac{3\text{m}}{\cos(53^\circ)}$$

19) Hypotenuse of Right Angle Triangle given Sin Alpha 

$$\text{fx } S_{\text{Hypotenuse}} = \frac{S_{\text{Opposite}}}{\sin(\alpha)}$$

Open Calculator 

$$\text{ex } 5.008543\text{m} = \frac{4\text{m}}{\sin(53^\circ)}$$



20) Opposite Side of Angle Alpha given Sin Alpha 

$$fx \quad S_{\text{Opposite}} = S_{\text{Hypotenuse}} \cdot \sin(\alpha)$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

$$ex \quad 3.993178\text{m} = 5\text{m} \cdot \sin(53^\circ)$$

21) Opposite Side of Angle Alpha given Tan Alpha 

$$fx \quad S_{\text{Opposite}} = S_{\text{Adjacent}} \cdot \tan(\alpha)$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5_img.jpg\)](#)

$$ex \quad 3.981134\text{m} = 3\text{m} \cdot \tan(53^\circ)$$

22) Sec Alpha 

$$fx \quad \sec \alpha = \frac{S_{\text{Hypotenuse}}}{S_{\text{Adjacent}}}$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2_img.jpg\)](#)

$$ex \quad 1.666667 = \frac{5\text{m}}{3\text{m}}$$

23) Sin Alpha 

$$fx \quad \sin \alpha = \frac{S_{\text{Opposite}}}{S_{\text{Hypotenuse}}}$$

[Open Calculator !\[\]\(06a315363e7801bba8c7489a6694af19_img.jpg\)](#)

$$ex \quad 0.8 = \frac{4\text{m}}{5\text{m}}$$



24) Tan Alpha

[Open Calculator !\[\]\(3d8c13c92b853674f749aac6fa869926_img.jpg\)](#)

$$\text{fx } \tan \alpha = \frac{S_{\text{Opposite}}}{S_{\text{Adjacent}}}$$

$$\text{ex } 1.333333 = \frac{4\text{m}}{3\text{m}}$$





Variables Used

- **cos A** Cos A
- **cos α** Cos Alpha
- **cosec A** Cosec A
- **cosec α** Cosec Alpha
- **cot A** Cot A
- **cot α** Cot Alpha
- **S_{Adjacent}** Adjacent Side of Angle Alpha (*Meter*)
- **S_{Hypotenuse}** Hypotenuse Side (*Meter*)
- **S_{Opposite}** Opposite Side of Angle Alpha (*Meter*)
- **sec A** Sec A
- **sec α** Sec Alpha
- **sin A** Sin A
- **sin α** Sin Alpha
- **tan A** Tan A
- **tan α** Tan Alpha
- **α** Angle Alpha of Trigonometry (*Degree*)








Constants, Functions, Measurements used

- **Function:** **cos**, $\cos(\text{Angle})$
Trigonometric cosine function
- **Function:** **sin**, $\sin(\text{Angle})$
Trigonometric sine function
- **Function:** **sqrt**, $\text{sqrt}(\text{Number})$
Square root function
- **Function:** **tan**, $\tan(\text{Angle})$
Trigonometric tangent function
- **Measurement:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Angle** in Degree ($^{\circ}$)
Angle Unit Conversion 



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