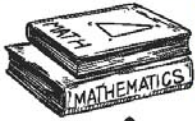


Name :

Class :



# Trigonometric Identities



A Trigonometric Identity is an equation involving the trigonometric functions that holds for all values of the variable.

## Trigonometric Identities

### Reciprocal Identities

$$\begin{aligned} \csc \theta &= \frac{1}{\sin \theta} \\ \sec \theta &= \frac{1}{\cos \theta} \\ \cot \theta &= \frac{1}{\tan \theta} \end{aligned}$$

### Pythagorean Identities

$$\begin{aligned} \sin^2 \theta + \cos^2 \theta &= 1 \\ \sec^2 \theta &= 1 + \tan^2 \theta \\ \csc^2 \theta &= 1 + \cot^2 \theta \end{aligned}$$

### Half-Angle Formulas

$$\begin{aligned} \sin\left(\frac{\theta}{2}\right) &= \pm \sqrt{\frac{1 - \cos \theta}{2}} \\ \cos\left(\frac{\theta}{2}\right) &= \pm \sqrt{\frac{1 + \cos \theta}{2}} \\ \tan\left(\frac{\theta}{2}\right) &= \frac{1 - \cos \theta}{\sin \theta} \end{aligned}$$



Find the values of following using trigonometric identities

1)  $\frac{\tan^2 t + 1}{1 + \cot^2 t}$

$\tan^2 t$

2)  $\frac{\sec t \tan t}{\tan^2 t + 1}$

$\sin t$

3)  $\frac{1}{\sec t - \tan t} - \frac{1}{\sec t + \tan t}$

$2 \tan t$

4)  $\frac{\sin^2 t \cot^2 t}{1 - \sin^2 t}$

$1$

5)  $\sec t \tan t \cos t$

$\tan t$

6)  $\frac{\cos^2 t - 1}{\cos^2 t \tan^2 t}$

$-1$