

Simplify the trigonometric expression by following the indicated direction.

1) Rewrite over a common denominator: $\frac{1}{1 - \cos \theta} + \frac{1}{1 + \cos \theta}$ 1) _____

2) Multiply and simplify: $\frac{(\cot \theta + 1)(\cot \theta + 1) - \csc^2 \theta}{\cot \theta}$ 2) _____

Establish the identity. Start from one side and expand until you find the other side of the equation. Don't skip work!

3) $\tan \theta \cdot \csc \theta = \sec \theta$ 3) _____

4) $\cot^2 x = (\csc x - 1)(\csc x + 1)$ 4) _____

5) $1 - \frac{\cos^2 u}{1 - \sin u} = -\sin u$ 5) _____

6) $\frac{1 - \sec \theta}{\tan \theta} + \frac{\tan \theta}{1 - \sec \theta} = -2 \csc \theta$ 6) _____

7) $\frac{\sin x + \cos x}{\sin x - \cos x} = \frac{1 + 2 \sin x \cos x}{2 \sin^2 x - 1}$ 7) _____

8) $\frac{1 - \sin t}{\cos t} = \frac{\cos t}{1 + \sin t}$ 8) _____

9) $\frac{\cot x}{1 + \csc x} = \frac{\csc x - 1}{\cot x}$ 9) _____

10) $\frac{1 + \csc x}{\sec x} = \cos x + \cot x$ 10) _____