

Simplify each trigonometric expression into a single trigonometric function or a constant

1. $\sin^2\theta \cot\theta \csc\theta$

2. $\frac{\sec x \tan x}{\tan^2 x + 1}$

3. $\frac{\tan x}{\tan x + \cot x}$

4. $\frac{\cos\theta}{\sin\theta \cot\theta}$

5. $\cos\theta + \sin\theta \tan\theta$

6. $\cos x(1 + \tan^2 x)$

Verify each trigonometric identity by either simplifying only one side so that it looks like the other side or working on both sides separately until they look the same.

7. $1 + \sec x = \frac{1 + \cos x}{\cos x}$

8. $\tan\theta + \cot\theta = \sec\theta \cdot \csc\theta$