

Complete the identity.

- 1)  $\sec x - \frac{1}{\sec x} = ?$  1) \_\_\_\_\_  
 A)  $\sec x \csc x$  B)  $\sin x \tan x$  C)  $-2 \tan^2 x$  D)  $1 + \cot x$
- 2)  $\csc x(\sin x + \cos x) = ?$  2) \_\_\_\_\_  
 A)  $1 + \cot x$  B)  $-2 \tan^2 x$  C)  $\sin x \tan x$  D)  $\sec x \csc x$
- 3)  $\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = ?$  3) \_\_\_\_\_  
 A)  $\sin x \tan x$  B)  $\sec x \csc x$  C)  $1 + \cot x$  D)  $-2 \tan^2 x$
- 4)  $\sin^2 x + \tan^2 x + \cos^2 x = ?$  4) \_\_\_\_\_  
 A)  $\sin x$  B)  $\cot^3 x$  C)  $\sec^2 x$  D)  $\tan^2 x$
- 5)  $\frac{(\csc x + 1)(\csc x - 1)}{\cot^2 x} = ?$  5) \_\_\_\_\_  
 A) 1 B) 0 C) 2 D) -1
- 6)  $\frac{1 - \sin x}{\cos x} = ?$  6) \_\_\_\_\_  
 A)  $-\sec x - \tan x$  B)  $\sec x + \tan x$  C)  $\sec x - \tan x$  D)  $\sec x - \tan x + 1$

Verify the identity.

- 7)  $\csc^2 u - \cos u \sec u = \cot^2 u$  7) \_\_\_\_\_
- 8)  $1 + \sec^2 x \sin^2 x = \sec^2 x$  8) \_\_\_\_\_

Establish the identity.

- 9)  $(\tan v + 1)^2 + (\tan v - 1)^2 = 2 \sec^2 v$  9) \_\_\_\_\_
- 10)  $\frac{\tan u - 1}{\tan u + 1} = \frac{1 - \cot u}{1 + \cot u}$  10) \_\_\_\_\_
- 11)  $1 - \frac{\cos^2 u}{1 - \sin u} = -\sin u$  11) \_\_\_\_\_
- 12)  $\frac{\sec \theta - 1}{\tan \theta} = \frac{\tan \theta}{\sec \theta + 1}$  12) \_\_\_\_\_
- 13)  $\frac{\cos u}{\cos u - \sin u} = \frac{1}{1 - \tan u}$  13) \_\_\_\_\_

Answer Key

Testname: PRACTICE09

1) B

2) A

3) B

4) C

5) A

6) C

$$7) \csc^2 u - \cos u \sec u = \csc^2 u - \cos u \cdot \frac{1}{\cos u} = \csc^2 u - 1 = \cot^2 u$$

$$8) 1 + \sec^2 x \sin^2 x = 1 + \frac{\sin^2 x}{\cos^2 x} = 1 + \tan^2 x = \sec^2 x.$$

$$9) (\tan v + 1)^2 + (\tan v - 1)^2 = \tan^2 v + 2 \tan v + 1 + \tan^2 v - 2 \tan v + 1 = 2(\tan^2 v + 1) = 2 \sec^2 v$$

$$10) \frac{\tan u - 1}{\tan u + 1} = \frac{\frac{1}{\cot u} - 1}{\frac{1}{\cot u} + 1} = \frac{\frac{1 - \cot u}{\cot u}}{\frac{1 + \cot u}{\cot u}} = \frac{1 - \cot u}{1 + \cot u}$$

$$11) 1 - \frac{\cos^2 u}{1 - \sin u} = 1 - \frac{1 - \sin^2 u}{1 - \sin u} = 1 - \frac{(1 - \sin u)(1 + \sin u)}{1 - \sin u} = 1 - (1 + \sin u) = -\sin u$$

$$12) \frac{\sec \theta - 1}{\tan \theta} = \frac{\sec \theta - 1}{\tan \theta} \cdot \frac{\sec \theta + 1}{\sec \theta + 1} = \frac{\sec^2 \theta - 1}{\tan \theta (\sec \theta + 1)} = \frac{\tan^2 \theta}{\tan \theta (\sec \theta + 1)} = \frac{\tan \theta}{\sec \theta + 1}$$

$$13) \frac{\cos u}{\cos u - \sin u} = \frac{\cos u}{\cos u - \sin u} \cdot \frac{\frac{1}{\cos u}}{\frac{1}{\cos u}} = \frac{1}{1 - \frac{\sin u}{\cos u}} = \frac{1}{1 - \tan u}$$