

Verify each of the following identities.

* Answers may vary - see teacher to check if your proof is acceptable.

1. $\tan^2 x = \frac{1 - \cos^2 x}{\cos^2 x}$

$$= \frac{\sin^2 x}{\cos^2 x}$$

$$\tan^2 x = \tan^2 x$$

2. $\tan x = \sin x \sec x$

$$\frac{\sin x}{1} \cdot \frac{1}{\cos x}$$

$$\frac{\sin x}{\cos x}$$

$$\tan x = \tan x$$

3. $\sin^2 x + \cos^2 x + \tan^2 x = \sec^2 x$

$$1 + \tan^2 x =$$

$$\sec^2 x = \sec^2 x$$

4. $\frac{1 - \sin^2 x}{\cos x} = \cos x$

$$\frac{\cos^2 x}{\cos x} =$$

$$\cos x = \cos x$$

$$5. \quad \frac{\tan^2 x + 1}{\sec x} = \sec x$$

$$\frac{\sec^2 x}{\sec x} =$$

$$\sec x = \sec x$$

$$6. \quad \sin^2 x (1 + \cot^2 x) = 1$$

$$\sin^2 x (\csc^2 x) =$$

$$\sin^2 x \left(\frac{1}{\sin^2 x} \right) =$$

$$1 = 1$$

$$7. \quad \frac{\cos x}{\sin x \cot x} = 1$$

$$\frac{\cos x}{\cancel{\sin x} \cdot \frac{\cos x}{\cancel{\sin x}}}$$

$$\frac{\cos x}{\cos x} =$$

$$1 = 1$$

$$8. \quad \frac{\tan x}{\sec x} = \sin x$$

$$\frac{\sin x}{\cos x} \cdot \frac{1}{\frac{1}{\cos x}}$$

$$\frac{\sin x}{\cos x} \cdot \frac{\cos x}{1}$$

$$\sin x = \sin x$$