

2. Verify each trigonometric identity.

a) $\sin \theta (\csc^2 \theta - 1) = \frac{\cos \theta}{\tan \theta}$

b) $\frac{\sec x}{\cot x + \tan x} = \frac{\tan x}{\sec x}$

Algebra 2 Bellwork Wednesday, June 1, 2016

Answers

1. Simplify this trigonometric expression. $\csc x \cdot \tan x - \tan x \cdot \sin x$

$$\begin{aligned} &= \frac{1}{\sin} \cdot \frac{\sin}{\cos} - \frac{\sin}{\cos} \cdot \sin \\ &= \frac{1}{\cos} - \frac{\sin^2}{\cos} \end{aligned} \quad \begin{aligned} &= \frac{1 - \sin^2}{\cos} \\ &= \frac{\cos^2}{\cos} \end{aligned}$$

$= \cos x$

2. Verify each trigonometric identity.

a) $\sin \theta (\csc^2 \theta - 1) = \frac{\cos \theta}{\tan \theta}$

$$\sin(\cot^2) = \frac{\cos}{\frac{\sin}{\cos}}$$

$$\sin\left(\frac{\cos^2}{\sin^2}\right) = \cos \cdot \frac{\cos}{\sin}$$

$$\frac{\cos^2}{\sin} = \frac{\cos^2}{\sin} \quad \checkmark$$

b) $\frac{\sec x}{\cot x + \tan x} = \frac{\tan x}{\sec x}$

$$\frac{\frac{1}{\cos}}{\frac{\cos}{\cos} \cdot \frac{\cos}{\sin} + \frac{\sin}{\cos} \cdot \frac{\sin}{\sin}} = \frac{\frac{\sin}{\cos}}{\frac{1}{\cos}}$$

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

$$\frac{1}{\cos} \cdot \frac{\cos \cdot \sin}{1} = \sin \quad \checkmark$$