

Bellwork Alg 2B Thursday, May 17, 2018

Verify each trigonometric identity.

1. $\cos\theta \cdot \cot\theta = \csc\theta - \sin\theta$

2. $\frac{\sec x}{\cot x + \tan x} = \frac{\tan x}{\sec x}$

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

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(1) $\cos \cdot \cot = \csc - \sin$

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

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

$$\downarrow = \frac{1 - \sin^2}{\sin}$$

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

(2) $\frac{\sec}{\cot + \tan} = \frac{\tan}{\sec}$

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

$$\frac{\sin}{\cos^2 + \sin^2} = \frac{\sin}{\cos} \cdot \frac{\cos}{1}$$

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

$$\boxed{\sin x = \sin x}$$

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

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

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

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