Warm - Up

Simplify each expression.

1.)
$$\frac{\cot x \csc x}{\cos x}$$

Chapter 7

Learning Target 1
I can verify basic trig identities.

TRIG IDENTITIES

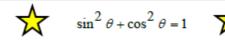
Quotient Identities

$$\tan \theta = \frac{\sin \theta}{\cos \theta} \qquad \cot \theta = \frac{\cos \theta}{\sin \theta}$$

Reciprocal Identities $\sin \theta = \frac{1}{\cos \theta} = \frac{1}{\tan \theta} = \frac{1}{\tan \theta}$

$$\csc \theta = \frac{1}{\sin \theta}$$
 $\sec \theta = \frac{1}{\cos \theta}$
 $\cot \theta = \frac{1}{\tan \theta}$

Pythagorean Identities





Verifying Trig Identities



An identity is an equation that is always true no matter what values is used for the variable. (excluding values that give an undefined value.)

$$2x + 3 = 2x + 3$$
 $x = x$ $\sin^2 x + \cos^2 x = 1$

Things to "TRY" in a Proof

*Work on one side, usually the more complicated side.

*Try to do any indicated operation: add or multiply

*With fractions, try to factor then cancel or split the fraction.

*Substitute in basic identities.

*Multiply by the conjugate.

If all else fails, turn everything into terms of sin and/or cos.

1) Verify.

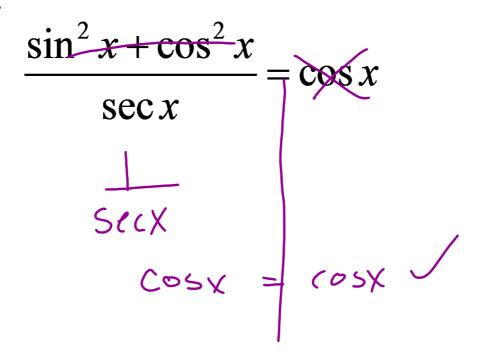
$$\frac{\csc x \tan x = \sec x}{-\frac{1}{\sin x}}$$

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

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

$$\frac{1}{\cos x} = \sec x$$

2) Verify.



3) Verify.

$$\cos x \tan x \csc x = 1$$

$$\cos x \tan x \csc x = 1$$

4) Verify.

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

$$\frac{\cot x}{\cos x}$$

$$\frac{\cot x}{\cos x}$$

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

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

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

$$\frac{1}{\sec^{2}x} + \frac{1}{\csc^{2}} = 1$$

$$\cos^{2}x + \sin^{2}x = 1$$

$$\frac{1}{|x|} = 1$$

$$2 \cdot (\frac{\sec^{2}(0 - \tan^{2}0) + \cot^{2}0 = \csc^{2}0}{(1 + \cot^{2}0) = \csc^{2}0}$$

$$\frac{1}{|x|} + \cot^{2}0 = \csc^{2}0$$

$$\frac{1}{|x|} + \cot^{2}0 = \csc^{2}0$$