Math 3   Name_____
PRACTICE Quiz 4.1 - 4.2 Fundamental Identities

Verify each identity. Must show all work! Give reason for each step for credit.

1) $\dfrac{1}{\csc^2 x \cos x} = \dfrac{\sin x}{\cot x}$

2) $\sec^2 x \sin^2 x = \dfrac{1}{\cot^2 x}$

 Made with Infinite Precalculus.

3) $\dfrac{1 - \sec^2 x}{\sin^2 x} = -\sec^2 x$

4) $\dfrac{\sec^2 x - \tan^2 x}{\cot x} = \sec x \sin x$

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PRACTICE Quiz 4.1 - 4.2 Fundamental Identities

Verify each identity. Must show all work! Give reason for each step for credit.

1) $\dfrac{1}{\csc^2 x \cos x} = \dfrac{\sin x}{\cot x}$

$\qquad \dfrac{1}{\csc^2 x \cos x} \qquad$ Use $\csc x = \dfrac{1}{\sin x}$

$\qquad \dfrac{\sin^2 x}{\cos x} \qquad$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\qquad \dfrac{\sin x}{\cot x} \qquad \blacksquare$

2) $\sec^2 x \sin^2 x = \dfrac{1}{\cot^2 x}$

$\qquad \sec^2 x \sin^2 x \qquad$ Use $\sec x = \dfrac{1}{\cos x}$

$\qquad \dfrac{\sin^2 x}{\cos^2 x} \qquad$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\qquad \dfrac{1}{\cot^2 x} \qquad \blacksquare$

3) $\dfrac{1 - \sec^2 x}{\sin^2 x} = -\sec^2 x$

$\qquad \dfrac{1 - \sec^2 x}{\sin^2 x}$ $\qquad$ Use $\tan^2 x + 1 = \sec^2 x$

$\qquad -\dfrac{\tan^2 x}{\sin^2 x}$ $\qquad$ Decompose into sine and cosine

$\qquad -\dfrac{\left(\dfrac{\sin x}{\cos x}\right)^2}{\sin^2 x}$ $\qquad$ Simplify

$\qquad -\dfrac{1}{\cos^2 x}$ $\qquad$ Use $\sec x = \dfrac{1}{\cos x}$

$\qquad -\sec^2 x$ $\qquad$ ■

4) $\dfrac{\sec^2 x - \tan^2 x}{\cot x} = \sec x \sin x$

$\qquad \dfrac{\sec^2 x - \tan^2 x}{\cot x}$ $\qquad$ Use $\tan^2 x + 1 = \sec^2 x$

$\qquad \dfrac{1}{\cot x}$ $\qquad$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\qquad \dfrac{\sin x}{\cos x}$ $\qquad$ Use $\sec x = \dfrac{1}{\cos x}$

$\qquad \sec x \sin x$ $\qquad$ ■