Hon Alg 2 Bellwork Thursday, June 1, 2017

Simplify each trigonometric expression.

1. $(\text{Sec}^2 y)(\text{Cot}^2 y)(\text{Sin} y)$

2. $\dfrac{\text{Sin}^2 x}{\text{Cos}x \cdot \text{Tan}x}$

3. $(\text{Tan}x + \text{Cot}x)(\text{Sin}x \cdot \text{Cos}x)$

4. $\dfrac{\text{Sin}\theta \cdot \text{Cos}\theta}{\text{Cot}\theta}$

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Hon Alg 2 Bellwork 6-1-17

Answers

(1.) $(\sec^2 y)(\cot^2 y)(\sin y) = \left(\frac{1}{\cos^2 y}\right)\left(\frac{\cos^2 y}{\sin^2 y}\right)(\sin y)$

$= \frac{1}{\sin^2 y} \cdot \sin y = \frac{1}{\sin y} = \boxed{\csc y}$

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(2) $\frac{\sin^2 x}{\cos x \cdot \tan x} = \frac{\sin^2 x}{\cos x \cdot \frac{\sin x}{\cos x}} = \frac{\sin^2 x}{\sin x} = \boxed{\sin x}$

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(3) $(\tan x + \cot x)(\sin x \cdot \cos x)$

$= \left(\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x}\right)(\sin x \cdot \cos x)$

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

$= \sin x \cdot \sin x + \cos x \cdot \cos x$

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

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(4) $\frac{\sin\theta \cdot \cos\theta}{\cot\theta} = \frac{\sin\theta \cdot \cos\theta}{\frac{\cos\theta}{\sin\theta}} = \sin\theta \cdot \cos\theta \cdot \frac{\sin\theta}{\cos\theta}$

$= \sin\theta \cdot \sin\theta$

$= \boxed{\sin^2\theta}$