

## Warm Up

Prove the following identity:

$$\frac{\sin^2 2\theta}{\cos \theta} \cdot \csc^2 \theta = \frac{4}{\sec \theta}$$

$$\frac{(2\sin\theta\cos\theta)^2}{\cos\theta} \cdot \frac{1}{\sin^2\theta}$$

$$\frac{4\cancel{\sin^2\theta}\cancel{\cos^2\theta}}{\cancel{\cos\theta}} \cdot \frac{1}{\cancel{\sin^2\theta}}$$

$$\boxed{4\cos\theta}$$

$$\frac{4}{\frac{1}{\cos\theta}}$$

$$4 \cdot \frac{\cos\theta}{1}$$

$$\boxed{4\cos\theta}$$

## Questions from Homework

$$\textcircled{1} \quad \frac{\tan \theta}{\cos \theta} = \sin \theta \sec^2 \theta$$

$\frac{\sin \theta}{\cos \theta} \cdot \frac{1}{\cos \theta}$	$\sin \theta \cdot \frac{1}{\cos^2 \theta}$
$\frac{\sin \theta}{\cos^2 \theta}$	$\frac{\sin \theta}{\cos^2 \theta}$

$$\textcircled{2} \quad \cot^4 B + \cot^2 B = \frac{\cos^2 B}{\sin^4 B}$$

$\cot^2 B (\cot^2 B + 1)$	
$\frac{\cos^2 \theta}{\sin^2 \theta} \cdot \csc^2 \theta$	$\uparrow$ Pythagorean
$\frac{\cos^2 \theta}{\sin^2 \theta} \cdot \frac{1}{\sin^2 \theta}$	
$\frac{\cos^2 \theta}{\sin^4 \theta}$	

$$\textcircled{3} \quad \frac{1 + \cos \theta}{\sin \theta} \cdot \frac{\sin \theta}{1 - \cos \theta}$$

$$(1 + \cos \theta)(1 - \cos \theta) = \sin^2 \theta$$

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

## Questions from Homework (From Short sheet)

$$\textcircled{3} \quad \boxed{\sin(x+y)} \boxed{\sin(x-y)} = \cos^2 y - \cos^2 x$$

$$(\sin x \cos y + \cos x \sin y)(\sin x \cos y - \cos x \sin y) \quad \boxed{\cos^2 y - \cos^2 x}$$

$$\boxed{\sin^2 x \cos^2 y} - \boxed{\cos^2 x \sin^2 y}$$

$$(\boxed{1 - \cos^2 x})(\cos^2 y) - \cos^2 x (\boxed{1 - \cos^2 y})$$

$$\cos^2 y - \cancel{\cos^2 x \cos^2 y} - \cos^2 x + \cancel{\cos^2 x \cos^2 y}$$

$$\boxed{\cos^2 y - \cos^2 x}$$

$$\textcircled{4} \quad \boxed{\sin(x-y)} + \boxed{\cos(x+y)} = (\cos x + \sin x)(\cos y - \sin y)$$

$$\sin x \cos y - \cos x \sin y + \cos x \cos y - \sin x \sin y \quad \boxed{(\sin x + \cos x)(\cos y - \sin y)}$$

$$(\sin x \cos y - \sin x \sin y) + (\cos x \cos y - \cos x \sin y)$$

$$\sin x (\cos y - \sin y) + \cos x (\cos y - \sin y)$$

$$\boxed{(\sin x + \cos x)(\cos y - \sin y)}$$

$$\textcircled{6} \quad \cos \theta (1 - \boxed{\cos 2\theta}) \quad \sin \theta \boxed{\sin 2\theta}$$

$$\cos \theta (1 - (\cos^2 \theta - \sin^2 \theta)) \quad (\sin \theta)(2 \sin \theta \cos \theta)$$

$$\cos \theta (1 - \cos^2 \theta + \sin^2 \theta) \quad \boxed{2 \sin^2 \theta \cos \theta}$$

$$\cos \theta (\sin^2 \theta + \sin^2 \theta)$$

$$\cos \theta (2 \sin^2 \theta)$$

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

**Finish Final Review for Homework  
Test Tomorrow**