

Warm Up

Prove the following identity:

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

$$\frac{(2\sin\theta\cos\theta)^2}{\cos\theta} \cdot \frac{1}{\sin^2\theta} \quad \Bigg| \quad 4 \div \frac{1}{\cos\theta}$$

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

$$4\cos\theta$$

$$4\cos\theta$$

Questions from Homework

$$\begin{aligned} \textcircled{3} \quad \sin(x+y) \sin(x-y) &= \cos^2 y - \cos^2 x \\ (\sin x \cos y + \cos x \sin y) (\sin x \cos y - \cos x \sin y) & \qquad \cos^2 y - \cos^2 x \\ \sin^2 x \cos^2 y - \cos^2 x \sin^2 y & \\ (1 - \cos^2 x) \cos^2 y - \cos^2 x (1 - \cos^2 y) & \\ \cos^2 y - \cancel{\cos^2 x \cos^2 y} - \cos^2 x + \cancel{\cos^2 x \cos^2 y} & \\ \cos^2 y - \cos^2 x & \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad \sin(x-y) + \cos(x+y) &= (\cos x + \sin x) (\cos y - \sin y) \\ \sin x \cos y - \cos x \sin y + \cos x \cos y - \sin x \sin y & \left\{ \begin{array}{l} \cos x \cos y - \cos x \sin y + \sin x \cos y - \sin x \sin y \\ \sin x \cos y - \cos x \sin y + \cos x \cos y - \sin x \sin y \end{array} \right. \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad \tan^2 \theta &= \frac{1 - \cos^2 \theta}{1 + \cos^2 \theta} \\ &= \frac{1 - (\cos^2 \theta - \sin^2 \theta)}{1 + (\cos^2 \theta - \sin^2 \theta)} \\ &= \frac{1 - \cos^2 \theta + \sin^2 \theta}{1 - \sin^2 \theta + \cos^2 \theta} \\ &= \frac{\sin^2 \theta + \sin^2 \theta}{\cos^2 \theta + \cos^2 \theta} \\ &= \frac{\cancel{2} \sin^2 \theta}{\cancel{2} \cos^2 \theta} \\ &= \tan^2 \theta \end{aligned}$$

Finish Review for Homework