

HW Check: Ditto II

Quiz.

HW: 8.5

## Warm-Up

Prove.

$$\frac{(1-\cos\theta)}{(1-\cos\theta)(1+\cos\theta)} + \frac{1}{(1-\cos\theta)(1+\cos\theta)} = 2\csc^2\theta$$

$$\frac{1-\cos\theta+1+\cos\theta}{(1-\cos\theta)(1+\cos\theta)} = 2\left(\frac{1}{\sin^2\theta}\right)$$

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

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

$$\sin^2x = (1 - \cos^2x)$$

$$2) \frac{\sin^2x}{1-\cos^2x}$$

$$\frac{1-\cos^2x}{1-\cos^2x}$$

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

$$\frac{2}{\sin^2x}$$

$$\frac{2}{\sin^2x}$$

Ditto II

$$1. \cot x \sin x = \frac{1}{\sec x}$$
$$\frac{\cos x}{\sin x} \cdot \frac{\sin x}{1} = \cos x$$
$$\cos x = \cos x$$
$$\checkmark$$

$$\begin{aligned} 2. \tan x &= \frac{\sec x}{\csc x} \\ \frac{\sin x}{\cos x} &= \frac{\frac{1}{\cos x}}{\frac{1}{\sin x}} \\ \frac{\sin x}{\cos x} &= \frac{1}{\cos x} \cdot \frac{\sin x}{1} \\ \frac{\sin x}{\cos x} &= \frac{\sin x}{\cos x} \end{aligned}$$

$$\begin{array}{lcl}
 3. \csc x & = & \frac{\cot x}{\cos} \\
 \frac{1}{\sin x} & = & \frac{\frac{\cos x}{\sin x}}{\cos x} \\
 & & \frac{\cos x}{\sin x} \cdot \frac{1}{\cancel{\cos x}} \\
 \frac{1}{\sin x} & = & \frac{1}{\sin x} \\
 & & \checkmark
 \end{array}$$

4.  $\tan^2 x \overset{\text{Identity}}{(1 + \cot^2 x)} = \sec^2 x$

$$\frac{\sin^2 x}{\cos^2 x} (\csc^2 x) = \frac{1}{\cos^2 x}$$
$$\frac{\cancel{\sin^2 x}}{\cos^2 x} \cdot \frac{1}{\cancel{\sin^2 x}} = \frac{1}{\cos^2 x}$$
$$\frac{1}{\cos^2 x} = \frac{1}{\cos^2 x}$$

✓

$$5. \cos^2 x - \sin^2 x = 2\cos^2 x - 1$$

$$\begin{array}{rcl}
 \cos^2 x - (1 - \cos^2 x) & \neq & \\
 \cos^2 x - 1 + \cos^2 x & \neq & \\
 2\cos^2 x - 1 & = & 2\cos^2 x - 1 \\
 \checkmark & & 
 \end{array}$$

$$\begin{array}{l}
 \sin^2 x + \cos^2 x = 1 \\
 \sin^2 x = (1 - \cos^2 x)
 \end{array}$$

$$6. \sin A + \cos A \cot A = \csc A$$

$$\begin{array}{l} \sin A + \frac{\cos A}{1} \cdot \frac{\cos A}{\sin A} = \frac{1}{\sin A} \\ \frac{\sin A}{\sin A} + \frac{\cos^2 A}{\sin A} = \frac{1}{\sin A} \\ \frac{(\sin^2 A + \cos^2 A)}{\sin A} = \frac{1}{\sin A} \\ \frac{1}{\sin A} = \frac{1}{\sin A} \end{array}$$

$$7. \sec^2 A (1 - \sin^2 A) = 1$$

$$\frac{1}{\cos^2 A} \left( \frac{\cos^2 A}{1} \right) \neq 1$$

$$1 \neq 1$$

$$\checkmark$$

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

$$-\sin^2 x \quad -\sin^2 x$$

$$\cos^2 x = (1 - \sin^2 x)$$

$$8. \sec x + \tan x = \left( \frac{\cancel{\cos x}}{1 - \sin x} \right) \left( \frac{\cos x}{\cancel{\cos x}} \right)$$

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

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

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

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

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

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

$$\frac{\cos^2 x}{\cos x - \sin x \cos x}$$

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

$$\cancel{\cos x} (1 - \sin x)$$

$$\frac{\cos x (1 + \sin x)}{(1 - \sin x) (1 + \sin x)}$$

$$\frac{\cos x (1 + \sin x)}{1 - \sin^2 x}$$

$$\frac{\cancel{\cos x} (1 + \sin x)}{\cos^2 x}$$

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

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

$$\cos^2 x = 1 - \sin^2 x$$