

Warm Up 2/25

1) Find $\sin x (\csc x) = 1$

2) Given $\sin x = -0.148$ find $\cos(x - \frac{\pi}{2})$

$\cos(x - \frac{\pi}{2}) = \cos(-(\frac{\pi}{2} - x))$
 $= \cos(\frac{\pi}{2} - x)$
 $= \sin x$
 $= -0.148$

3) $\frac{\sin x}{1 - \cos x} = \csc x + \cot x$

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

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

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

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

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

$\csc x + \cot x = \csc x + \cot x$

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

cancel

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

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

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

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

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

5.2 day 2

Goal: Continue improving our transformations skills

$$\text{ex)} \frac{\tan^2 x + 1}{1 - \sin^2 x} = \sec^4 x$$

$$\frac{\sec^2 x}{\cos^2 x}$$

$$\frac{\sec^2 x}{\frac{1}{\sec^2 x}}$$

$$\sec^4 x = \sec^4 x \quad \checkmark$$

y'

$$\frac{\sec x}{1 - \sec x} - \frac{\sec x}{1 + \sec x} = -2 \csc^2 x$$

$$\frac{\sec x + \sec^2 x}{1 - \sec^2 x} - \frac{\sec x - \sec^2 x}{1 - \sec^2 x}$$

$$\frac{\sec x + \sec^2 x - (\sec x - \sec^2 x)}{-\tan^2 x}$$

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

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

$$-2 \left(\frac{1}{\sin^2 x} \right)$$