

DAY 2 WORK FOR ODD IF YOU NEEDED  
MORE EXAMPLES

1. Chose  $\sec^2 \theta = \tan^2 \theta + 1$   
 $\left(\frac{8}{5}\right)^2 = \tan^2 \theta + 1$   
 $\frac{64}{25} = \tan^2 \theta + 1$

$$\frac{64}{25} - 1 = \tan^2 \theta$$

$$\sqrt{\frac{39}{25}} = \sqrt{\tan^2 \theta}$$

$$+\frac{\sqrt{39}}{5} = \tan \theta$$

$$-\frac{\sqrt{39}}{5} = \tan \theta \text{ b/c } \sin < 0$$

$$\cot \theta = -\frac{5}{\sqrt{39}} \text{ b/c}$$

it's THE RECIPROCAL

3.  $\sec \alpha \sin\left(\frac{\pi}{2} - \alpha\right)$

$$\sec \alpha \cos \alpha$$

$$\frac{1}{\cos \alpha} \cdot \cos \alpha$$

$$\frac{\cos \alpha}{\cos \alpha}$$

$$1 \text{ (D)}$$

SINCE  $\sin\left(\frac{\pi}{2} - \alpha\right)$  IS  $\cos \alpha$

← WE WILL REPLACE IT

←  $\sec \alpha$  IS  $\frac{1}{\cos \alpha}$

← multiply

← simplify

5.  $\cos(-\alpha) \tan(-\alpha)$

$$\cos \alpha (-\tan \alpha)$$

$$\cos \alpha \left(-\frac{\sin \alpha}{\cos \alpha}\right)$$

$$-\sin \alpha \text{ (G)}$$

← Use NEGATIVE ANGLE IDS

← QUOTIENT ID FOR TAN

← MULTIPLY

7.  $\frac{\tan\left(\frac{\pi}{2} - \alpha\right) \csc \alpha}{\csc^2 \alpha}$

← Co-FUNCTION ID ! REDUCE

$$\frac{\cot \alpha}{\csc \alpha}$$

$$\frac{\cot \alpha}{\csc \alpha}$$

← PUT IN SIN / COS

$$\frac{\cos \alpha}{\sin \alpha}$$

$$\frac{1}{\sin \alpha}$$

$$\Rightarrow \cos \alpha \text{ (A)}$$

← mult by reciprocal

9.  $\sin x + \sin x \cot^2 x$

$$\sin x (1 + \cot^2 x)$$

$$\sin x (\csc^2 x)$$

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

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

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

$$\csc x \quad (C)$$

← FACTOR out a  $\sin x$

← PyTAG ID

← PUT IN TERMS OF SIN

← MULT

← REDUCE

← RECIP ID

11.  $\sin \theta \cot \theta - \cos \theta \tan \theta$

$$\sin \theta \left( \frac{\cos \theta}{\sin \theta} \right) - \cos \theta \left( \frac{\sin \theta}{\cos \theta} \right)$$

$$\cos \theta - \sin \theta$$

← PUT IN SIN/COS

← MULTIPLY

13.  $\frac{1}{\sin^2 x} + \frac{\sec^2 x}{\tan^2 x}$

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

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

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

$$\csc^2 x + \csc^2 x$$

$$2 \csc^2 x$$

← PUT IN SIN/COS

← SIMPLIFY FRACTION BY MULTIPLYING BY RECIPROCAL

← SIMPLIFY

← RECIPROCAL ID

← ADD

15.  $\frac{\sec x}{\sin x} - \frac{\sin x}{\cos x} \leftarrow \text{PUT IN SIN/COS}$

$\frac{\frac{1}{\cos x}}{\sin x} - \frac{\sin x}{\cos x} \leftarrow \text{SIMPLIFY 1<sup>ST</sup> FRACTION}$

$\frac{1}{\sin x \cos x} - \frac{\sin x}{\cos x} \leftarrow \text{FIND LCD \& BALANCE FRACTIONS}$

$\frac{1 - \sin x (\sin x)}{\sin x \cos x} \leftarrow \text{MULTIPLY NUMERATOR}$

$\frac{1 - \sin^2 x}{\sin x \cos x} \leftarrow \text{PYTHAG ID IN NUM}$

$\frac{\cos^2 x}{\sin x \cos x} \leftarrow \text{REDUCE}$

$\frac{\cos x}{\sin x} \leftarrow \text{QUOTIENT ID}$

$\cot x$