

- WS. #3
1. Change to sine/cosine
  2. combine fractions
  3. pythag. ID.

- #4 (Right side)
1. convert to sine/cosine
  2. combine fractions
  3. Pythag ID.
  - 4 Simplify

- #5.
1. Convert to sine/cosine
  2. Simplify

- #6.
1. Pythag ID  $\rightarrow$  den, & num.
  2. Simplify

#44 (Right side)

1. factor into conjugate pair
2. pythagorean ID

- #55.
1. Convert to sine/cosine
  2. Division of fractions
  3. combine fractions
  4. Pythag ID
  5. Simplify

$$3. \sec \theta - \cos \theta = \sin \theta \tan \theta$$

$$\frac{1}{\cos \theta} - \cos \theta = \frac{\sin \theta}{\cos \theta}$$

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

$$\frac{\sin^2 \theta}{\cos \theta} = \frac{\sin \theta \sin \theta}{\cos \theta} = \sin \theta \tan \theta \checkmark$$

$$4. \sec \theta = \sin \theta (\tan \theta + \cot \theta)$$

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

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

$$= \sin \theta \left( \frac{1}{\cos \theta \sin \theta} \right) = \frac{1}{\cos \theta}$$

$$\sec \theta = \sec \theta \checkmark$$

$$5. \tan x \csc x \cos x = 1$$

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

$$1 = 1 \quad \checkmark$$

$$6. \frac{\csc^2 \theta - \cot^2 \theta}{1 - \sin^2 \theta} = \sec^2 \theta$$

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

$$\sec^2 \theta = \sec^2 \theta \quad \checkmark$$

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

$$44. \sec^2\theta + \tan^2x = \sec^4\theta - \tan^4\theta$$

$$= (\sec^2\theta + \tan^2\theta)(\sec^2\theta - \tan^2\theta)$$

$$\sec^2\theta + \tan^2x = (\sec^2\theta + \tan^2\theta) \cdot 1 \quad \checkmark$$

$$\tan^2 + 1 = \sec^2$$

$$1 = \sec^2 - \tan^2$$

$$55. \frac{\sec x}{\cos x} - \frac{\tan x \sec x}{\csc x} = 1$$

$$\left(\frac{1}{\cos x}\right) \cdot \left(\frac{1}{\cos x}\right) - \left(\frac{\sin x}{\cos x}\right) \left(\frac{1}{\cos x}\right) \left(\frac{\sin}{1}\right) =$$

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

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

$$\frac{\cos^2 x}{\cos^2 x} = 1 = 1 \quad \checkmark$$