

## Today's Plan:

**Learning Target (standard):** I will establish trigonometric identities.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Go over your identities with someone near you. It is your responsibility to get the help you need to make sure you understand the process!



p.461 #7-17 odd (board work)

Day Two

Verify the identity.

7)  $\tan \theta \cot \theta - \cos^2 \theta = \sin^2 \theta$

~~$\tan \theta \left( \frac{1}{\tan \theta} \right) - \cos^2 \theta$~~

$1 - \cos^2 \theta$

$(\sin^2 \theta + \cos^2 \theta) - \cos^2 \theta$

$\sin^2 \theta \therefore \text{Q.E.D.}$

Verify the identity.

9)  $(\sec \theta - 1)(\sec \theta + 1) = \tan^2 \theta$

~~$\sec^2 \theta + \sec \theta - \sec \theta - 1$~~

$\sec^2 \theta - 1$

$(\tan^2 \theta + 1) - 1$

$\tan^2 \theta \therefore \text{Q.E.D.}$

Verify the identity.

$$11) (\sec \theta + \tan \theta)(\sec \theta - \tan \theta) = 1$$

$$\sec^2 \theta - \cancel{\sec \theta \tan \theta} + \cancel{\sec \theta \tan \theta} - \tan^2 \theta$$

$$\sec^2 \theta - \tan^2 \theta$$

$$(\tan^2 \theta + 1) - \tan^2 \theta$$

|  $\therefore$  Q.E.D.

Verify the identity.

$$13) \cos^2 \theta (1 + \tan^2 \theta) = 1$$

$$\cos^2 \theta (\sec^2 \theta)$$

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

|  $\therefore$  Q.E.D.

Verify the identity.

$$15) (\sin \theta + \cos \theta)^2 + (\sin \theta - \cos \theta)^2 = 2$$

$$\sin^2 \theta + \cancel{2\sin \theta \cos \theta} + \cos^2 \theta + \sin^2 \theta - \cancel{2\sin \theta \cos \theta} + \cos^2 \theta$$

$$\sin^2 \theta + \cos^2 \theta + \sin^2 \theta + \cos^2 \theta$$

$$(1) + (1)$$

$$2 \therefore \text{Q.E.D.}$$

Verify the identity.

$$17) \sec^4 \theta - \sec^2 \theta = \tan^4 \theta + \tan^2 \theta$$

$$\sec^2 \theta (\sec^2 \theta - 1)$$

$$(\tan^2 \theta + 1)((\tan^2 \theta + 1) - 1)$$

$$(\tan^2 \theta + 1)(\tan^2 \theta)$$

$$\tan^4 \theta + \tan^2 \theta \therefore \text{Q.E.D.}$$

Establish the identity.

$$*\sec\theta - \tan\theta = \frac{\cos\theta}{1 + \sin\theta}$$

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

$$\frac{1 - \sin\theta}{\cos\theta} \cdot \frac{1 + \sin\theta}{1 + \sin\theta}$$

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

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

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

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

$$\frac{\cos\theta}{1 + \sin\theta} \quad \therefore \text{Q.E.D.}$$

\* HINT: If you have simplified & what you are trying to get is "almost" the reciprocal of what you have, multiply by the conjugate of either the top or bottom.

\* Do NOT multiply the non-conjugate pair together.

## Assignment:

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