

## **14.3- Fundamental Trigonometric Identities**

# **Classwork/ Homework**

Pg. 906-907 #53-13 odd

53)  $\tan \theta$

$$\frac{\sin \theta}{\cos \theta}$$

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

$$\sqrt{\sin^2 \theta} = \sqrt{1 - \cos^2 \theta}$$

$$\sin \theta = \pm \sqrt{1 - \cos^2 \theta}$$

51)  $\sin \theta$

$$\pm \sqrt{1 - \cos^2 \theta}$$

$$49) \tan^2 \theta - 2 \sec \theta \sin \theta$$

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

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

$$47) \tan \theta \csc \theta \sec \theta = \sec^2 \theta$$

$$\frac{\cancel{\sin \theta}}{\cos \theta} \cdot \frac{1}{\cancel{\sin \theta}} \cdot \frac{1}{\cos \theta} = \frac{1}{\cos^2 \theta}$$

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

$$45) \sec \theta (1 - \sin^2 \theta) = \cos \theta$$

$$\frac{1}{\cancel{\cos \theta}} \cdot \frac{\cos^2 \theta}{1} = \cos \theta$$

$$\cos \theta = \cos \theta$$

$$43) \frac{\cos \theta}{1 - \sin^2 \theta} = \sec \theta$$

$$\frac{\overset{1}{\cancel{\cos \theta}}}{\overset{1}{\cos^2 \theta}} = \frac{1}{\cos \theta}$$

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

$$41) \frac{\sec \theta}{\cos \theta} = \sec^2 \theta$$

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

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

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

$$39) \cot^2 \theta = \cos^2 \theta \csc^2 \theta$$

$$\frac{\cos^2 \theta}{\sin^2 \theta} = \frac{\cos^2 \theta}{1} \cdot \frac{1}{\sin^2 \theta}$$

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

$$37) \frac{\tan^2 \theta}{\sec^2 \theta} = \sin^2 \theta$$

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

$$\frac{\sin^2 \theta}{\cancel{\cos^2 \theta}} \cdot \frac{\cancel{\cos^2 \theta}}{1} = \sin^2 \theta$$

$$\sin^2 \theta = \sin^2 \theta$$

$$\frac{\tan^2 \theta}{\sec^2 \theta} = \frac{\sin^2 \theta}{1}$$

$$\tan^2 \theta = \sec^2 \theta \sin^2 \theta$$

$$\frac{\sin^2 \theta}{\cos^2 \theta} = \frac{1}{\cos^2 \theta} \cdot \frac{\sin^2 \theta}{1}$$

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

$$35) \frac{\sec \theta}{\csc \theta} = \tan \theta$$

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

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

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

$$33) \tan^2 \theta \cos^2 \theta + \csc \theta$$

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

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

$$31) \cot \theta \cos \theta$$

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

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

$$29) (1 - \cot^2 \theta)(\cot^2 \theta + 1)$$

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

$$\frac{\cancel{\cos^2 \theta}}{\sin^2 \theta} + 1 - \frac{\cos^4 \theta}{\sin^4 \theta} - \frac{\cancel{\cos^2 \theta}}{\sin^2 \theta}$$

$$1 - \frac{\cos^4 \theta}{\sin^4 \theta} = \frac{1 - \cos^4 \theta}{(1 - \cos^2 \theta)^2}$$

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

$$1 - \cot^4 \theta$$

$$1 - \frac{\cos^4 \theta}{\sin^4 \theta} = 1 - \frac{\cos^4 \theta}{\sin^2 \theta \sin^2 \theta}$$

$$\frac{1 - \cos^4 \theta}{(1 - \cos^2 \theta)(1 + \cos^2 \theta)}$$

$$27) 2 \sin^2 \theta - 1$$

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

$$2 - 2\cos^2 \theta - 1$$

$$1 - 2\cos^2 \theta$$

$$25) \frac{\sin \theta}{\cot \theta} \cos \theta$$

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

$$\frac{\sin \theta}{1} \cdot \frac{\sin \theta}{\cancel{\cos \theta}} \cdot \frac{\cancel{\cos \theta}}{1}$$

$$\sin^2 \theta$$

$$23) \frac{\csc^2 \theta}{\cot^2 \theta}$$

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

$$\frac{1}{\cancel{\sin^2 \theta}} \cdot \frac{\cancel{\sin^2 \theta}}{\cos^2 \theta} = \frac{1}{\cos^2 \theta} = \sec^2 \theta$$

$$21) \frac{\sin \theta}{\tan \theta}$$

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

$$\frac{\cancel{\sin \theta} \cdot \cos \theta}{\cancel{\sin \theta}}$$

$$\cos \theta$$

$$19) \frac{\sin^2 \theta}{\cos \theta} \cdot \csc \theta$$

$$\frac{\sin^2 \theta}{\cos \theta} \cdot \frac{1}{\cancel{\sin \theta}} = \frac{\sin \theta}{\cos \theta}$$

Tan  $\theta$

$$17) \csc \theta \sin^2 \theta$$

$$\frac{1}{\cancel{\sin \theta}} \cdot \frac{\sin^{\cancel{1}} \theta}{1}$$

$$\boxed{\sin \theta}$$

$$15) \tan \theta \csc \theta$$

$$\frac{\cancel{\sin \theta}}{\cos \theta} \cdot \frac{1}{\cancel{\sin \theta}}$$

$$\frac{1}{\cos \theta} = \sec \theta$$

$$13) \cot \theta \sin \theta$$

$$\frac{\cos \theta}{\cancel{\sin \theta}} \cdot \frac{\cancel{\sin \theta}}{1}$$

$$\boxed{\cos \theta}$$