

Name: Key

### 14.3 Day ONE: Trigonometric Identities Homework

1.  $\csc \theta \cos \theta \tan \theta = 1$   $1 = 1 \checkmark$

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

$$\text{CLT } \frac{\cancel{\cos \theta} \sin \theta}{\sin \theta \cancel{\cos \theta}} = 1$$

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

$$\tan^2 \theta + 1 - 1 = \tan^2 \theta$$

$$\tan^2 \theta = \tan^2 \theta \checkmark$$

3.  $\frac{\tan \theta}{\sin \theta} = \sec \theta$

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

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

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

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

4.  $\sin \theta (1 + \cot^2 \theta) = \csc \theta$

$$\sin \theta (\csc^2 \theta) = \csc \theta$$

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

$$\frac{\cancel{\sin \theta}}{\sin^2 \theta} = \csc \theta$$

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

$$\csc \theta = \csc \theta$$

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

$$5. \frac{\cos \theta \csc \theta}{\tan \theta} = \cot^2 \theta$$

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

$$\cot^2 \theta = \cot^2 \theta \checkmark$$

$$6. \frac{\sin \theta \csc \theta}{\cot \theta} = \tan \theta$$

$$\frac{\frac{\sin \theta}{1} \cdot \frac{1}{\sin \theta}}{\cot \theta} = \frac{1}{\cot \theta} = \tan \theta$$

$$\tan \theta = \tan \theta$$

$$7. \frac{1 - \cos^2 \theta}{\sin^2 \theta} = 1$$

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

$$1 = 1 \checkmark$$