

Day #77 Homework

For problems 1 and 2, an angle θ is described. Draw and label the reference triangle for each angle and then find the exact values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$.

1. $\cos \theta = -\frac{5}{13}$ and θ terminates in Quadrant III	2. $\sin \theta = -\frac{3}{4}$ and θ terminates in Quadrant IV

3. Verify that the equation below is a trigonometric identity.

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

Verify that the equations below are trigonometric identities.

$$4. \cot \theta + \tan \theta = 2 \csc 2\theta$$

$$5. \cos 4\theta = 8 \cos^4 \theta - 8 \cos^2 \theta + 1$$

Verify that each of the following equations is an identity.

$$6. \frac{\cos(a-b)}{\cos a \sin b} = \tan a + \cot b$$

$$7. \frac{\sin(a+b)}{\cos a \cos b} = \tan a + \tan b$$

$$8. (\sin \theta + \cos \theta)^2 = \sin 2\theta + 1$$

$$9. \tan \theta \sin 2\theta = 2 - 2 \cos^2 \theta$$

$$10. \frac{\sin 2\theta}{\sin \theta} = \frac{2}{\sec \theta}$$

$$11. \frac{\cos \theta}{\sin \theta \cot \theta} = \sin^2 \theta + \cos^2 \theta$$

$$12. \csc \theta \sin 2\theta - \sec \theta = \cos 2\theta \sec \theta$$

$$13. \frac{2 \tan B}{\sin 2B} = \sec^2 B$$