

Precalculus: Sections 5.1-5.2 Worksheet
Simplifying Trigonometric Expressions and Verifying Trigonometric Identities

Simplify the expressions and verify the identities. Make sure you show your steps in doing so!

1. $\sin^3\theta + \sin\theta \cdot \cos^2\theta = \sin\theta$

2. $\tan\theta + \cot\theta = \sec\theta \cdot \csc\theta$

3. $\frac{3\sin^2\theta + 4\sin\theta + 1}{\sin^2\theta + 2\sin\theta + 1}$

4. $\cos\theta(\tan\theta + \cot\theta) = \csc\theta$

5. $\frac{\sin^3\theta + \cos^3\theta}{\sin\theta + \cos\theta} = 1 - \sin\theta \cos\theta$

Hint: look up how to factor the sum of cubes for the numerator on the left side of the equation.

6. $\frac{\sec^2\theta - \tan^2\theta + \tan\theta}{\sec\theta} = \sin\theta + \cos\theta$