

## Trig Identities Homework

Verify the trig identities.

### Easier

$$1. \cos x - \cos x \sin^2 x = \cos^3 x$$

$$2. \frac{\sec x}{\csc x} + \frac{\sin x}{\cos x} = 2 \tan x$$

$$3. \cos^2 x - \sin^2 x = 2 \cos^2 x - 1$$

$$4. \frac{\sin^2 x - \cos^2 x}{\sin x + \cos x} = \sin x - \cos x$$

$$5. 3 \sin^2 x + 4 \cos^2 x = 3 + \cos^2 x$$

### Medium

$$6. \frac{\cos^2 t + 4 \cos t + 4}{\cos t + 2} = \frac{2 \sec t + 1}{\sec t}$$

$$7. \frac{\sin x + \cos x}{\sin x} - \frac{\cos x - \sin x}{\cos x} = \sec x \csc x$$

### Challenge

$$\frac{(1 - \sin x)}{\cos x} + \frac{\cos x}{(1 - \sin x)} = 2 \sec x$$