

## 5.2 Verifying Trigonometric Identities

Expression:  $\sin x \cdot \cos x + \tan x$

Equation:  $\sin x + 1 = 0$

Identity:  $\cos^2 x - \sin^2 x = 2\cos^2 x - 1$

To verify an identity, choose one side and use the fundamental identities and algebra to transform that side into the other.

Ex. ① Verify:  $\cos^2 x - \sin^2 x = 2\cos^2 x - 1$

Note: You may not treat the statement you are asked to verify as an equation. In other words, you may NOT add, subtract, multiply or divide both sides by the same expression.

Ex. ② Verify:

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

Ex. ③ Verify:

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

Ex. ④ Verify:

$$\tan^2 \alpha \cdot \sin^2 \alpha = \tan^2 \alpha - \sin^2 \alpha$$