

Trigonometry Worksheet: Verify Identities (1)

Verify the identities

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

start with left side using the identity  
 $\sin^2(x) + \cos^2(x) = 1$  or  $\cos^2(x) = 1 - \sin^2(x)$

hence:  $\cos^2(x) - \sin^2(x) = (1 - \sin^2 x) - \sin^2(x)$   
 $= \underline{1 - 2\sin^2 x}$

2.  $\frac{\csc^2 x - 1}{\csc^2 x} = \cos^2 x$

start with the left side using  
the identity  $\csc(x) = \frac{1}{\sin x}$

$$\frac{\csc^2(x) - 1}{\csc^2(x)} = \frac{\frac{1}{\sin^2(x)} - 1}{\frac{1}{\sin^2(x)}} = \frac{\frac{1 - \sin^2(x)}{\sin^2 x}}{\frac{1}{\sin^2(x)}} = 1 - \sin^2(x) = \underline{\cos^2(x)}$$