

Basic Trig Identities

$$1) \cot A = \frac{\cos A}{\sin A} = \frac{\cos^2 A}{\sin^2 A} = \cot^2 A$$

GCF 2) $\cos^2 \theta (\sin^2 \theta - 1) = -(\cos^2 \theta (\cos^2 \theta)) = -\cos^4 \theta = -\cos^4 \theta$

$$3) \cos x + \sin x \frac{\sin x}{\cos x} = \frac{\cos^2 x + \sin^2 x}{\cos x} = \frac{1}{\cos x} = \sec x$$

$$4) \frac{\sin^2 \beta \cot \beta}{\cos \beta} = \frac{\sin^2 \beta \left(\frac{\cos \beta}{\sin \beta} \right)}{\cos \beta} = \frac{\sin \beta \cos \beta}{\cos \beta} = \sin \beta$$

$$5) \frac{\cos \theta}{\frac{1}{\cos \theta} - \sin \theta} = \frac{\cos \theta}{\frac{1 - \sin \theta}{\cos \theta}} = \frac{\cos^2 \theta}{1 - \sin \theta} = \frac{1 - \sin^2 \theta}{1 - \sin \theta} = \frac{(1 - \sin \theta)(1 + \sin \theta)}{1 - \sin \theta}$$

$$6) \frac{\sin A \cos^3 A}{\cos A} = \sin A \cos^2 A$$

$$7) \frac{\tan \theta}{\frac{1}{\tan \theta}} = \tan^2 \theta \quad (8) \frac{\sin A \cos A}{\sin A} = \cos A$$

$$9) \frac{\cos x \cdot \sin x \cdot 1}{\cos x \sin x} = 1 \quad (10) \frac{\csc \beta}{1 - \cot^2 \beta} = \frac{\csc \beta}{\csc^2 \beta} = 1 = \sin \beta$$

$$11) \frac{(\cos^2 \alpha + \sin^2 \alpha)(\cos^2 \alpha + \sin^2 \alpha)}{1(1)} = 1 \quad (12) \sin x + \cos x \left(\frac{\sin x}{\cos x} \right) = \sin x + \sin x = 2 \sin x$$

$$(13) 1 - \sin^2 x = \cos^2 x$$

Column 2

$$1.) \sin x (\csc x) = \cos x$$

$$2.) \frac{\sec x}{\csc x} = \frac{1}{\cos x} \cdot \frac{\sin x}{1} = \tan x$$

$$3.) \frac{1 - \sin^2 x}{\cos x} = \frac{\cos^2 x}{\cos x} = \cos x$$

$$4.) \frac{\sin t (1 - \cos^2 t)}{\sin^3 t}$$

$$5.) \frac{\cos^2 x + \sin^2 x}{\cos x} \cdot \sin x$$

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

$$6.) \frac{\sin x (\sin^2 x + \cos^2 x)}{\sin x (1)} = \sin x$$

$$7.) \frac{\csc x - \sin x}{\csc x} = \frac{\csc x - \sin x}{\csc x}$$

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

$$9.) \frac{\sin x + \cos x}{\cos x} \cdot (1 + \sin x)$$

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