

27.1 to 27.3 Derivatives of Trig and Inverse Trig Functions

$$\frac{d}{dx}(\sin x) = \cos x$$

$$\frac{d}{dx}(\cos x) = -\sin x$$

$$\frac{d}{dx}(\tan x) = \sec^2 x$$

$$\frac{d}{dx}(\sec x) = \sec x \tan x$$

$$\frac{d}{dx}(\csc x) = -\csc x \cot x$$

$$\frac{d}{dx}(\cot x) = -\csc^2 x$$

$$\frac{d}{dx}(\sin^{-1} x) = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}(\cos^{-1} x) = \frac{-1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}(\tan^{-1} x) = \frac{1}{1+x^2}$$

Differentiate the following:

1. $y = 4 \sec(1 - x^3)$

2. $y = 0.4 \cos^{-1}(2\pi x + 1)$

3. $y = \sin(\tan^{-1} x)$

4. $y = 3 \cos^2 (\tan 3x)$

5. $y = \frac{\sin^{-1} x}{4x}$

6. $y = x \cos^{-1} x - \sqrt{1 - x^2}$

7. $y = x(\tan^{-1} x)^2 - 2x$