

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

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

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

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

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

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

$$\text{Ex: } \frac{d}{dx} (\cos^{-1}(\tan^{-1}(x^3)))$$

$$\text{Ex: } \frac{d}{dx} (\ln(x)) =$$

Suppose $s(t) = t^2 + 3t - 1$ represents position at time t .

Then velocity = $v(t) = \frac{d}{dt}(s(t)) = s'(t) =$

and acceleration = $a(t) = \frac{d}{dt}(v(t)) = v'(t) = s''(t) =$

jerk = change in acceleration

$$= D(a(t)) = \frac{d}{dt}(a(t)) = a'(t) = v''(t) = s'''(t) =$$

Ex: Find $\frac{d^{50}}{dx^{50}}(\sin(x)) =$

Ex: Find y'' if $2x^2y - 3y^2 = 4$