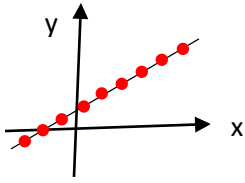


y is given , Find y'



$y = ax + b$ Line

$y' = a$ slope is constant

$y = x^2 - 3x + 4$ Parabola

$y' = 2x - 3$ example $x = 0$

$y'(x=0) = 0 - 3 = -3$

$y = x^n$

$y' = n \cdot x^{n-1}$

example $y = x^4 - \frac{x^3}{2}$

$y' = 4x^3 - \frac{3x^2}{2}$

$x = 1, y'(x=1) = 4 - \frac{3}{2} = 2.5$

$y = \frac{x}{x^2 - 1} \quad x \neq \pm 1$

$y = \frac{u}{v}$

$y' = \frac{u'v - uv'}{v^2}$

$y' = \frac{1 \cdot (x^2 - 1) - 2x \cdot x}{(x^2 - 1)^2} = -\frac{(x^2 + 1)}{(x^2 - 1)^2}$

$y' < 0$ for all x

when $x < -1$, $y < 0$

when $x > 1$, $y > 0$

$y = \frac{x^2}{2} - 2x$ Parabola

$y' = x - 2$

$y' = 0 \Rightarrow x - 2 = 0$

$x = 2$

$y = \frac{2^2}{2} - 4 = -2$

(2, -2) Min

