

$$2. \frac{d}{dx}(4x^2 + 2x + xy) = \frac{d}{dx} 2$$

$$= 8x + 2 + xy\left(\frac{d}{dx}\right) + y = \frac{d}{dx} 2$$

$$= 8x + 2 + xy' + y = 0$$

notation change for simplicity

we need to solve for y'

$$8x + 2 + xy' + y = 0$$

$$\cancel{xy'} = \frac{-(8x + 2 + y)}{x}$$

$$y' = \frac{-(8x + 2 + y)}{x}$$

we have a known point of $x = 2$
 $y = -9$

substitute →

$$y'(2) = \frac{-(8(2) + 2 + (-9))}{2}$$

$$= \frac{-16 + 2 - 9}{2}$$

$$= -\frac{9}{2} = -\left(\frac{9}{2}\right)$$