

3 Math

$$f(x, z, a, b) := y = (4ax^2 + a) + 3 + \sigma(z) + (\sigma(b))^2$$

a)

$$\frac{\partial y}{\partial x} = 8ax$$

b)

$$\frac{\partial y}{\partial z} = \sigma(z)(1 - \sigma(z))$$

c)

$$\frac{\partial y}{\partial a} = 4x^2 + 1$$

$$\begin{aligned} d) \frac{\partial y}{\partial b} &= 2\sigma(b) \cdot (\sigma(b)(1 - \sigma(b))) \\ &= 2\sigma(b)^2(1 - \sigma(b)) \end{aligned}$$