

1. Find the derivative of these functions.

(a) $y = (x^3 + 5x^6)^4$

$$y' = 4(x^3 + 5x^6)^3 * (3x^2 + 30x^5)$$

(b) $y = 3^{(x^7+8x)}$

$$y' = (7x^6 + 8)3^{(x^7+8x)} \ln(3)$$

(c) $y = \frac{x^3 + 4}{x^9 - 2}$

$$y' = \frac{(x^9 - 2) * 3x^2 - (x^3 + 4) * 9x^8}{(x^9 - 2)^2}$$

2. The total profit in dollars for producing and selling x items is given by $P(x)$.

Explain what $P'(175) = 546$ means in context of the items being made and sold.

The approximate profit for the 176th item is \$546.