

$$y = (3x^2 + 2)^5$$

(4) CHAIN RULE

$$\begin{aligned}\frac{dy}{dx} &= 5 (3x^2 + 2)^4 (6x) \\ &= 30x (3x^2 + 2)^4\end{aligned}$$

$$y = (5 - x^2)^3$$

$$\begin{aligned}\frac{dy}{dx} &= 3 (5 - x^2)^2 (-2x) \\ &= -6x (5 - x^2)^2\end{aligned}$$

$$\begin{aligned}\frac{dy}{dx} (x=2) &= -6(2)(5 - (2)^2)^2 \\ &= -12(5 - 4)^2 = -12(1)^2 = -12\end{aligned}$$

$$y = (x^2 - 2x - 3)^3$$

$$\frac{dy}{dx} = 3(x^2 - 2x - 3)^2(2x - 2)$$

$$= (6x - 6)(x^2 - 2x - 3)^2$$

$$\begin{aligned}\frac{dy}{dx}(x=1) &= (6(1) - 6)((1)^2 - 2(1) - 3)^2 \\ &= (0)(-4)^2 = 0\end{aligned}$$

QED