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GRUPO: A

GRADO: 4°

MATERIA: Calculo

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$$\textcircled{1} f(x) = 2x^4 + x^2 - x^2 + 4$$

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

$$= 4(2x)^{4-1} + 2(x)^{2-1} - 2(x)^{2-1} + 0$$

$$= 4(2x)^3 + 2x^1 - 2x^1 + 0$$

$$= 8x^3 + 2x - 2x$$

$$= \underline{8x^3}$$

$$\textcircled{2} f(x) = \frac{x+1}{x-1} \cdot \frac{u}{v} = \frac{d}{dx} \left(\frac{u}{v} \right) = \frac{v \left(\frac{du}{dx} \right) - u \left(\frac{dv}{dx} \right)}{v^2}$$

$$= \frac{(x-1) \left(\frac{d(x+1)}{dx} \right) - (x+1) \left(\frac{d(x-1)}{dx} \right)}{(x-1)^2}$$

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

$$= \frac{\cancel{x}-1 - x-1}{(x-1)^2} = \frac{-2}{(x-1)^2}$$

$$= \underline{\frac{-2}{(x-1)^2}}$$

$$\textcircled{3} f(x) = -2x^2 - 5$$

$$= \frac{d(-2x^2)}{dx} - \frac{d(5)}{dx}$$

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

$$= -2 (2x^{2-1})$$

$$= -2 (2x)$$

$$= \underline{-4x}$$

$$\textcircled{4} f(x) = \frac{(x^2 + 3x - 2)^{\frac{4}{n}}}{u} = \frac{d u^n}{dx} = n u^{n-1} \cdot \frac{du}{dx}$$

$$= 4(x^2 + 3x - 2)^{4-1} \cdot \left(\frac{d(x^2 + 3x - 2)}{dx} \right)$$

$$= 4(x^2 + 3x - 2)^3 \cdot [2x + 3]$$

$$= 4(2x + 3) \cdot [(x^2 + 3x - 2)^3]$$

$$= \underline{(8x + 12) \cdot [(x^2 + 3x - 2)^3]}$$

$$\textcircled{5} f(x) = \frac{5}{x^5} + \frac{3}{x^2}$$

$$= 5(x^{-5}) + 3(x^{-2}) \quad \text{Deriv} = n x^{n-1}$$

$$= 5(-5(x)^{-5-1}) + 3(-2(x)^{-2-1})$$

$$= -25 x^{-6} + -6 x^{-3}$$

$$= \frac{-25}{x^6} - \frac{6}{x^3}$$
