Write the Taylor series for $f(x) = 3x^3 + 4x^2 - 2x + 1$.

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10/9/25

$$f(x) = \sum_{n=0}^{\infty} \frac{f^n(0)}{n!} x^n$$

$$= 1 + (-2)x + \frac{8}{2!}x^2 + \frac{18}{3!}x^3$$

$$= 1 - 2x + 4x^2 + 3x^3$$

$f'(x) = 9x^2 + 8x - 2$

$f''(x) = 18x + 8$

$f'''(x) = 18$