

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Consider $f(x) = (x^3 - 5x)(x^2 + 1)$.

(a) Find $f'(x)$ using the product rule.

(b) Find $f'(x)$ in a different way.

2. [4 points] Find an equation for the tangent line to the graph of $f(x) = \frac{x^2 + 3x - 1}{x + 1}$ at $x = 2$.

3. [4 points] Suppose that a moving object finds itself at distance

$$s(t) = t^3 + \frac{3}{\sqrt[3]{t^2}} \text{ meters}$$

from the origin at time t in seconds. Find the acceleration of the object at $t = 8$ seconds.