

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] Compute the following derivatives:

(a) $[(x^3 - 5x^2)^3]' =$

(b) $[(x^2 + 7x)^3(x^9 - 3x^7)^5]' =$

2. [4 points] Find an equation for the tangent line to $f(x) = \frac{4}{\sqrt[3]{x^2 + 7}}$ at $x = 1$.

3. [6 points] Consider the function $f(x) = 12x^5 - 15x^4 - 40x^3$.

(a) Compute $f'(x)$ and find its critical points.

(b) Create a sign table for f' .

(c) State clearly the intervals where f is increasing/decreasing.

(d) State clearly the relative max/min points of f .