

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it and do only what is asked. 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. [3 points] Use long division and write your answer in an appropriate form:

$$(3x^5 + 5x^2 - 1) \div (x^2 + 1).$$

2. [3 points] Use synthetic division and write your answer in an appropriate form:

$$(3x^4 - x^2 + 5x - 2) \div (x + 2).$$

3. [3 points] Use the Remainder Theorem to compute $f(2)$, where $f(x) = x^3 + 2x^2 - 7$.

4. [3 points] Find by inspection a root of the polynomial $f(x) = 3x^3 + 17x^2 - 27x + 7$. Then, use the root you found, together with the Factor Theorem, to find the remaining roots of the polynomial. (Please, describe what you are doing as you proceed.)