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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. [6 points] Perform the long division and write your answer in an appropriate form.

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

2. [6 points] Consider the polynomial $P(x) = 2x^3 - 7x^2 - 7x + 30$. Suppose you know that $x = 3$ is a root of $P(x)$. Use the factor theorem to find the factors and remaining zeros of $P(x)$.