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

$$(x^4 - 7x^2 + 5x - 2) : (x^2 + x - 1).$$

2. [4 points] Compute in two different ways f(-3), where $f(x) = -x^4 + 9x^2 - 5x - 10$.

3. [4 points] Suppose that you know that x = 7 is a zero of the polynomial

$$f(x) = 2x^3 - 21x^2 + 34x + 105.$$

Use the Factor Theorem to find all factors and all zeros of f(x).