Solving Polynomials Homework

1.) Let $p(x) = x^3 - x^4 + 8x^2 - 9x + 30$. Evaluate $p(-2)$. What does the solution tell you about $p(x)$?

2.) Consider the polynomial function: $p(x) = x^4 - 3x^3 + ax^2 - 6x + 14$, where a is an unknown real number. If $(x-2)$ is a factor of this polynomial, what is the value of a?

3.) A polynomial function has zeros of 2, 2, -3, -3, -3, and 4. Write them in factored form and state the polynomial's degree. Why is the degree of the polynomial not 3?

For #4-7, find all the solutions (real and complex) for the following polynomials. If a solution has a multiplicity, make sure to state it.

3.) $f_{(x)} = x^4 - 7x^2 + 12$

4.) $f_{(x)} = x^4 - x^3 + 25x^2 - 25x$

5.) $f_{(x)} = x^3 - x + 6$

6.) $f_{(x)} = x^6 + 4x^4 - 41x^2 + 36$