Name: _____
4.1-4.3 Quiz Review

- Decide whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

1. $f(x) = 5 + 2x^2 - 3x^4 - 2x - x^3$

2. $g(x) = \frac{1}{4}x^3 + 2x - 3x^{-2} + 1$

- Preform the operation

3. $(7x^2 - 4) - (3x^2 - 5x + 1)$

4. $(7x^2 - 4)(3x^2 - 5x + 1)$

- Use binomial expansion (Pascal's triangle) to expand:

5. $(2x + 5)^5$

- Use long division to divide:

6. $(4x^4 - 2x^3 + x^2 - 5x + 8) \div (x^2 - 2x - 1)$

- Use synthetic division to divide

  7. $(x^4 - 5x^3 + 8x^2 - 72) \div (x - 6)$

- Use the remainder theorem to evaluate the following

  8. $f(x) = x^4 + 6x^2 - 7x + 1\ ;\ x = 3$

- Sketch a graph of the polynomial function *f* having the given characteristics. Use the graph to describe the degree and leading coefficient of the function *f*.

  - *f* is increasing when -2 < x < 0 and x > 2
    f is decreasing when x<-2 and 0 < x < 2

  - *f(x)* > 0 when x < -3, -1 < x < 1 , and x > 3
    f(x) < 0 when -3 < x < -1 and 1 < x < 3.