Name: _____

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There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. Show all work for full credit.

1. [11 points] Let $g(x) = \frac{3}{2}x^4 - 3x^3$. Note that we have the following:

$$g'(x) = 6x^3 - 9x^2$$

$$g''(x) = 18x^2 - 18x$$

You must show your work for all parts to receive credit!

a. Determine the intervals where g is **increasing** and where g is **decreasing**.

b. Find the x values where any **local maxima** occur and where any **local minima** occur.

c. Find the intervals where g is **concave up** and where g is **concave down**.

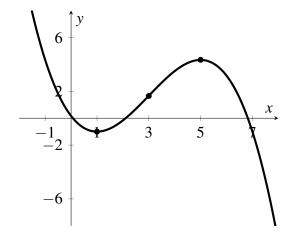
d. Find the x values where any **inflection points** occur.

2. [8 points] Evaluate the following limits. Show your work!

a.
$$\lim_{x \to -\infty} \frac{x^2 + 1}{x^2 - 2x^3}$$

b.
$$\lim_{x \to \infty} \frac{4x - 2}{\sqrt{5x^2 - 4}}$$

3. [6 points] Based on the graph of the function f(x) below, determine whether each value is positive, negative, zero, or undefined. You do not need to show your work.



- **a**. g'(1)
- **b**. g''(1)
- **c**. g'(3)
- **d**. g''(3)
- **e**. g'(5)
- f. g''(5)