Math 176
Quiz 2
Professor Busken **Name:** _____

Directions: You may not use a calculator or any other electronic device. You may not work together. Tutor help not okay. Show your work on ALL of the questions. Due at 5:30pm this Thursday, August 29th. No lates accepted!

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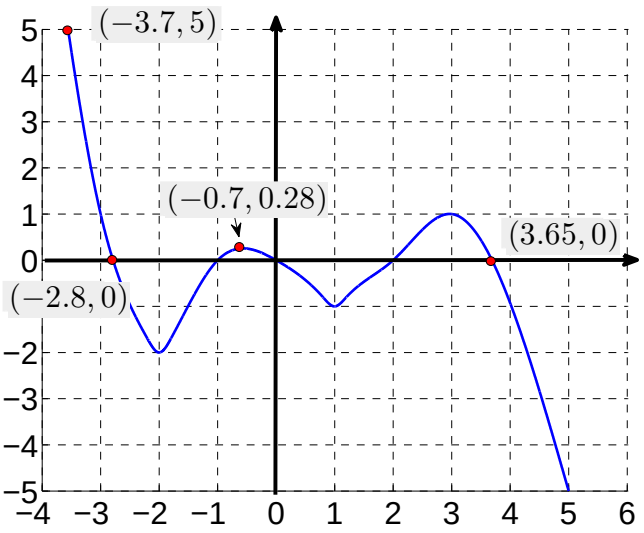
1. (12 points) The graph of a function f is given in the figure (right). Assume the entire graph of the function is shown.



(a) Find all local maximum and minimum values of the function and the value of x at which each occurs.

(b) State the x intervals for which $f(x) > 0$.

(c) State the x intervals for which $f(x) < 0$.

(d) Find the intervals on which the function is ***increasing***.

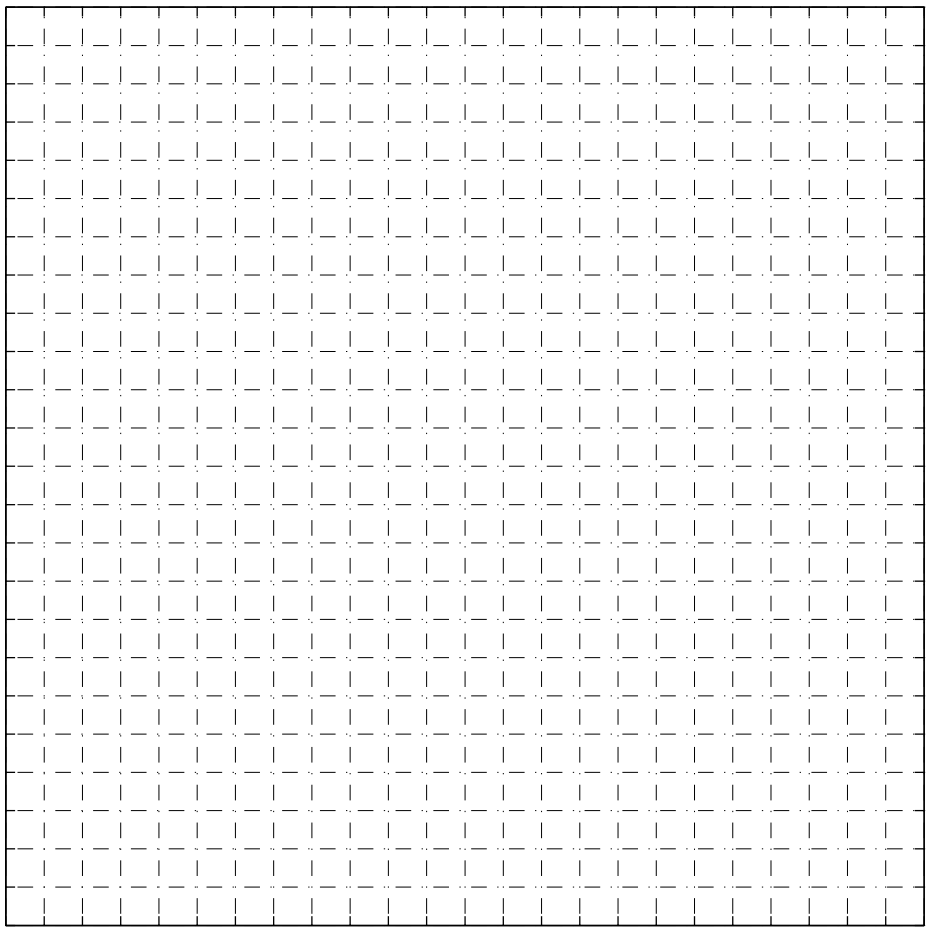
(e) Find the intervals on which the function is ***decreasing***.

(f) Find $f(4)$. (f) _____
(g) Find $f(5)$. (g) _____

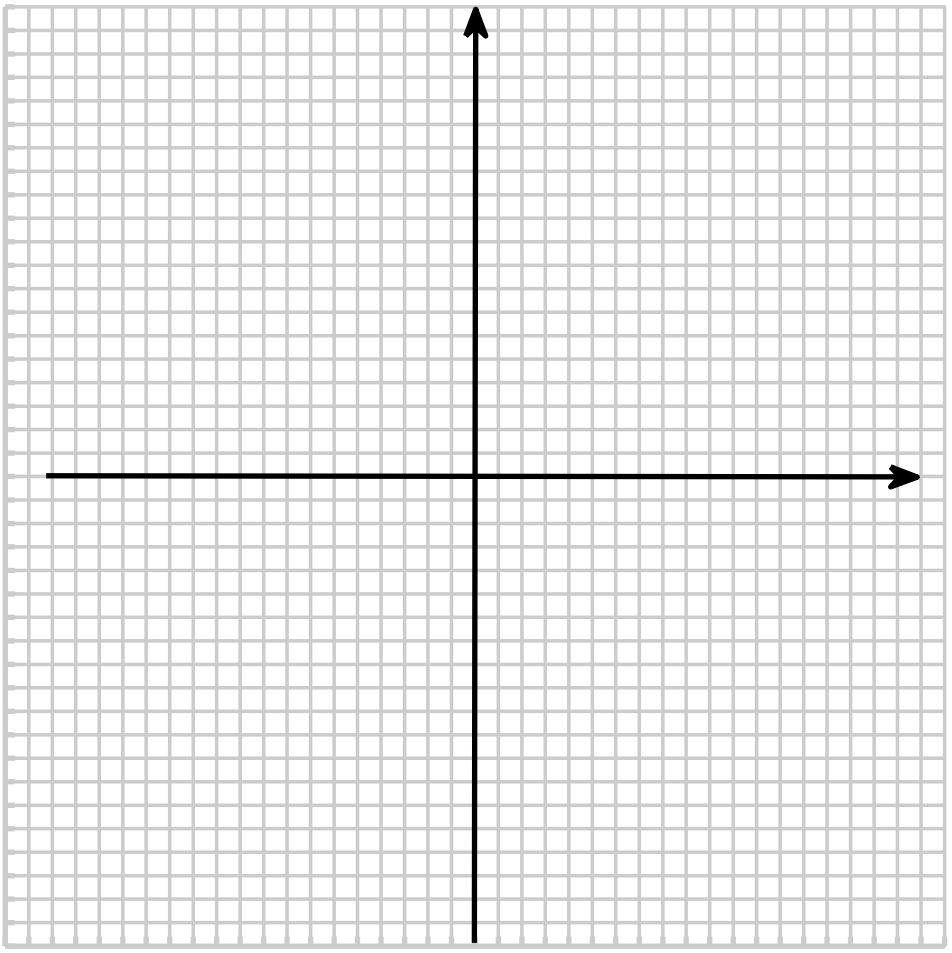
2. (5 points) Suppose $f(t) = 2t - t^3$ represents a distance traveled function. Find the average value of f over time interval $[5, 10]$.

2. _____

3. (5 points) Sketch the graph of the function $g(x) = 1 - 2|x - 3|$, not by plotting points, but by starting with the graph of a standard function and applying transformations. Label at least 3 points on your final graph.



4. (5 points) Sketch the graph of $f(x) = \left\{ \begin{array}{ll} 4x & \text{if } x < 0 \\ \sqrt{25 - x^2} & \text{if } 0 \leq x \leq 5 \\ (x-2)^2 & \text{if } x > 5 \end{array} \right\}$.



5. (5 points) Build and simplify the difference quotient, $\dfrac{f(a+h)-f(a)}{h}$, for $f(x) = 2x^2 - 1$. You know you are finished simplifying the difference quotient, when you can replace h with zero, and not get a division by zero error.

5. _____