Math 190 Midterm 3

You have 50 min. Answer each non-graph question neatly on the line provided.

Name: _____

1. (5 points) Evaluate and simplify $\frac{f(1+h)-f(1)}{h}$ when $f(x) = x^2 - 4x$.

1. _____

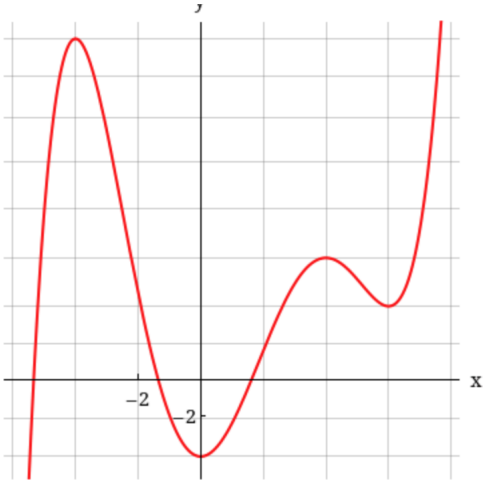
2. (5 points) Evaluate $g(a+1)$ when $g(t) = \frac{t+2}{t-2}$.

2. _____

3. (5 points) Find the average rate of change of $f(t) = \frac{2}{t}$ between $t = 4$ and $t = 10$.

3. _____

4. (5 points) Sketch the graph of $y = 50 - \frac{1}{2}(x+2)^2$ not by plotting points but by starting with the graph of a standard function and applying transformations. State the domain and range. Label all intercepts on your graph.

5. (5 points) The graph of a function is given. 

Use the graph to estimate all local maximum and minimum values of the function and the values of x at which each occurs.

5. _____

6. (5 points) Evaluate $g(g(3))$ when $g(x) = 5 - x^2$

6. _____

7. (5 points) Use the table

x	1	2	3	4	5	6
$f(x)$	2	3	5	1	6	3
$g(x)$	3	4	1	5	2	6

evaluate $g^{-1}(f(1))$.

7. _____

8. (5 points) Sketch the graph of the piecewise function $y = f(x) = x = \begin{cases} -1 & x \leq -1 \\ x & x \geq -1 \end{cases}$

9. (5 points) A manufacturer finds that the revenue generated by selling x units of a certain commodity is given by $R(x) = 80x - 0.4x^2$, where revenue $R(x)$ is measured in dollars. What is the maximum revenue, and how many units should be manufactured to obtain this maximum.

9. _____

10. (5 points) Find $f^{-1}(x)$ when $f(x) = \frac{3-x}{10}$.

10. _____

11. (5 points) Find the vertex and all intercepts of $f(x) = x^2 - 2x - 2$.

11. _____

12. (5 points) Sketch the graph of $y = |x - 11| - 1$ not by plotting points but by starting with the graph of a standard function and applying transformations.