

Name:

HW 5: §1.6-1.8

Complete the following problems to the best of your ability. **SHOW ALL OF YOUR WORK.** Unshown work will not be graded. You may use a calculator.

1. Let  $f(x) = 3x^2$  and let  $g(x) = -\frac{1}{2}x^3$ .

(a) Sketch a graph of  $f(x)$ .

(b) Sketch a graph of  $g(x)$ .

(c) Using a graphing calculator or a computer, find the intersection of  $f$  and  $g$ . At what  $x$ -value are these two functions the same?

2. Use a graphing calculator or a website with graphing capabilities (e.g. Wolfram Alpha) to graph the function  $f(x) = -2x^2 + 4x - 1$ . Use the graph to answer the following.

(a) Estimate  $f(4)$  from the graph.

(b) What are the domain and range of  $f$ ?

(c) On what interval(s) is  $f$  increasing? Decreasing?

(d) Give coordinates of any local extrema of  $f$ .

3. Suppose a business that prints t-shirts pays \$450 for rent on their building and equipment for a day, and that each t-shirt costs the business \$2.20 to print.

(a) Find a function  $C(x)$  that gives the cost  $C$  in dollars of printing  $x$  shirts.

(b) **Find and Interpret**  $C(85)$ .

4. Farmer O'Fencerty wants to build a rectangular fence using 900 meters of fencing.

(a) Find a function  $A(w)$  that gives the area  $A$  of the paddock as a function of  $w$ , the width of the paddock.

(b) Find and interpret  $A(350)$ .

**Optional Problems:**

1.6: All

1.7: All

1.8: All