Written Homework 1

Math 112

Due April 10th at the start of class

Textbook Exercises

Section 1: 1.1.1A, 1.1.2A, 1.1.4A, 1.1.C1

Section 2: 1.2.1A, 1.2.2A, 1.2.3A, 1.2.12A

Section 3: 1.3.1A, 1.3.2A, 1.3.4A, 1.3.9A, 1.3.10**B**

Exercise 1: A function f is given by $f(x) = 2x^2$.

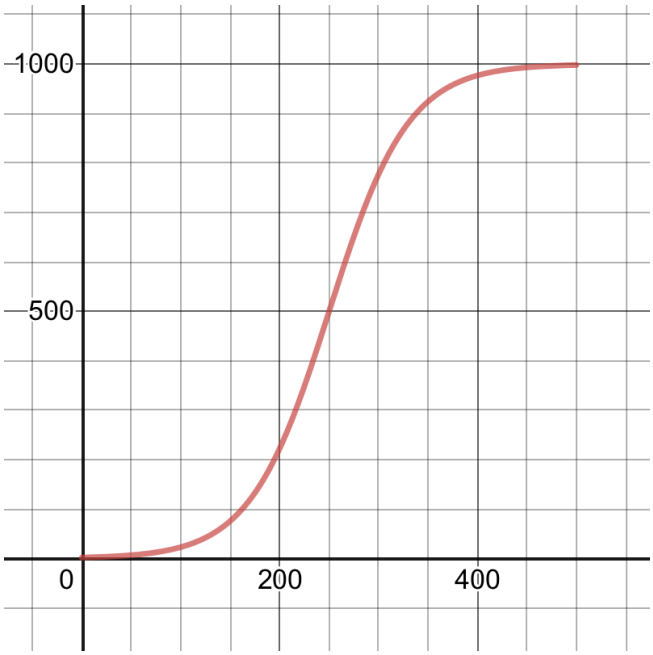
a) Sketch a graph of f.

b) Write an equation for a function g that is defined to be a vertical stretch of f by a factor of 5. Sketch a graph of g.

c) Write an equation for a function h that is defined to be a horizontal shift of g, 7 units to the right. Sketch a graph of h.

d) We defined h by first doing a vertical stretch, then a horizontal shift. If we did things the other way around, first shifting and then stretching, what would be the values we'd need to shift and stretch by?

Exercise 2: The following graph gives a model $I(t)$ for the number of thousands of individuals who have or have had a particular infection, t days after the first case.



a) We instead want to measure the number of infections w **weeks** after the first case. Sketch a graph of a function $J(w)$ that does this.

b) Sketch a graph of a function $K(w)$ that gives the number of **hundreds** of infections, w weeks after the first case.

c) Suppose we're a little late in realizing there's an infection at all, and we only start counting after the twenty-thousandth infection (!). Sketch the graph of a function $L(w)$ that gives the number of infections we count, w weeks after the first case.

Bonus: There's only one function that is both even and odd. Find it, and convince yourself that it's unique.