Homework 1

Math 112

Due January 15th at the start of class

Textbook Exercises

1.1: 1.1.1B, 1.1.2B, 1.1.4B, 1.1.C1

1.2: 1.2.1B, 1.2.2B, 1.2.3B, 1.2.12B

1.3: 1.3.1B, 1.3.2B, 1.3.4B, 1.3.9B, 1.3.10B

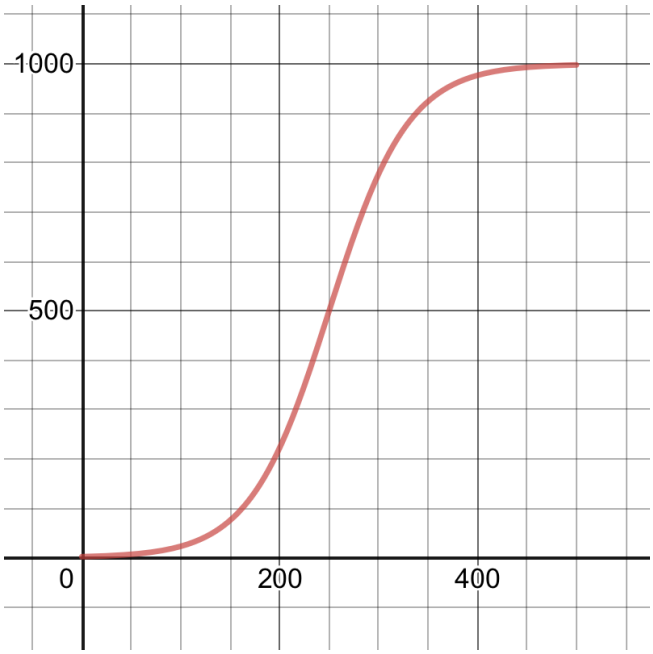
Exercise 1: A function f is given by $f(x) = 2x^2$.

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.

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 a function $J(w)$ that measures the number of thousands of infections w **weeks** after the first case. What transformation should we apply to $I(t)$ to get $J(w)$? Sketch a graph of the result.

b) If we want a function $K(w)$ that that gives the number of **hundreds** of infections, w weeks after the first case, what transformation should we apply to $J(w)$? Sketch a graph of $K(w)$.

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. If $L(w)$ gives the number of hundreds of infections we count, w weeks after the first case, write a transformation of $K(w)$ that gives $L(w)$ and sketch a graph of $L(w)$.

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