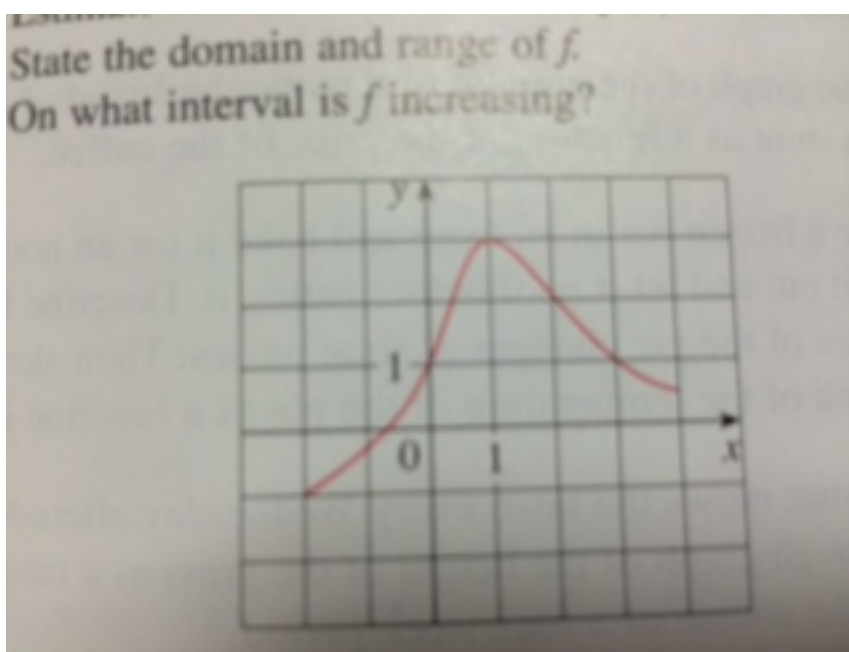


HW1: Due Tuesday, Sept. 2

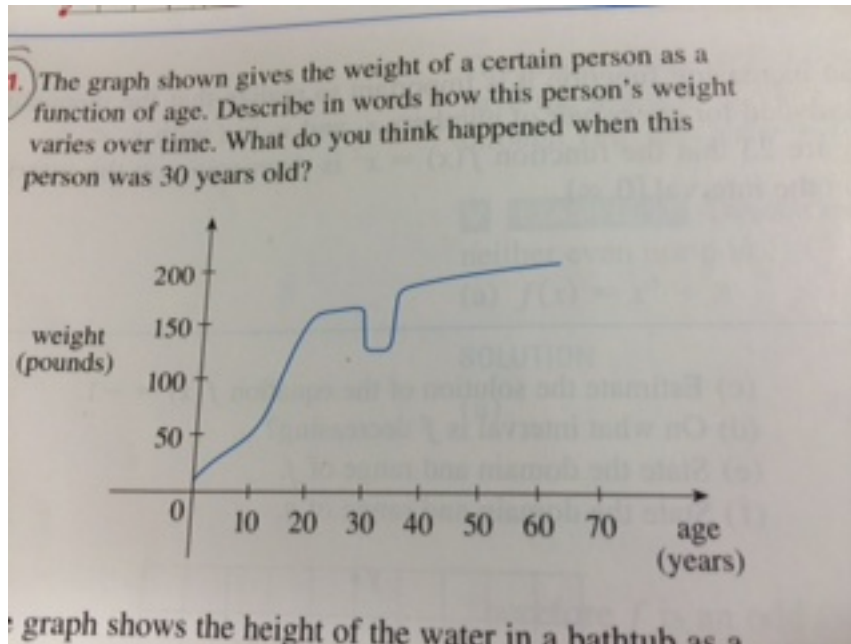
1 Section 1.1

3) The graph of a function f is given.

- State the value of $f(1)$.
- Estimate the value of $f(-1)$.
- For what values of x is $f(x) = 1$?
- Estimate the value of x such that $f(x) = 0$.
- State the domain and range of f .
- On what interval is f increasing?

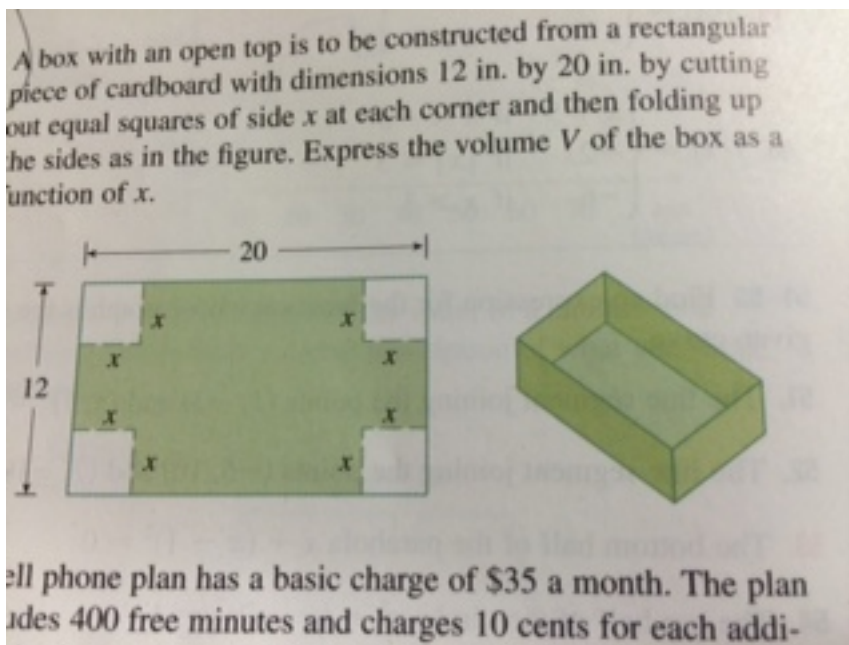


- 11) The graph shown gives the weight of a certain person as a function of age. Describe in words how this person's weight varies over time. What do you think happened when this person was 30 years old?



- 37) Find the domain of the function $F(p) = \sqrt{2 - \sqrt{p}}$.
- 45) Find the domain and sketch the graph of the function $G(x) = \frac{3x + |x|}{x}$.
- 53) Find an expression for the function whose graph is the bottom half of the parabola $x + (y - 1)^2 = 0$.
- 59) Express the area of an equilateral triangle as a function of the length of a side. What is the domain of this function?

- 63) A box with an open top is to be constructed from a rectangular piece of cardboard with dimensions 12 in. by 20 in. by cutting up equal squares of side x at each corner and then folding up the sides as in the figure. Express the volume V of the box as a function of x .



- 65) In a certain state the maximum speed permitted on freeways is 65 mi/h and the minimum speed is 40 mi/h. The fine for violating these limits is \$15 for every mile per hour above the maximum speed or below the minimum speed. Express the amount of the fine F as a function of the driving speed and graph $F(x)$ for $0 \leq x \leq 100$.

A function f is *even* if $f(x) = f(-x)$ for all real numbers x . A function f is *odd* if $f(-x) = -f(x)$ for all real numbers x . Visually, this means that even functions are symmetric across the y -axis and that odd functions are symmetric with respect to 180° rotation around the origin.

- 76) Determine whether the function $f(x) = x|x|$ is even, odd, or neither. If you have a graphing calculator, use it to check your answer visually.
- 80) If f and g are both even functions, is the product fg even? If f and g are odd functions, is fg odd? What if f is even and g is odd? Justify your answers.