HW 6: §2.1-2.3

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 $f(x) = \sqrt{2x-1} + 2$.

   (a) Find the net change of f from 1 to 5.

$f(5) - f(1)$

$= (\sqrt{10-1} + 2) - (\sqrt{2-1} + 2)$

$= (\sqrt{9} + 2) - (\sqrt{1} + 2) = (5) - (3) = 2$

   (b) Find the average rate of change of f from 1 to 5.

$= \dfrac{f(5) - f(1)}{5-1} = \dfrac{3}{4}$

2. Consider the following table that gives the number A of giant octopus attacks as a function of x, the number of years since 1950.

A	0	5	10	15	20
x	2	5	8	11	14

   (a) Find the average rate of change in A from 1950 to 1965.

$\dfrac{A(15) - A(0)}{15-0} = \dfrac{11-2}{15-0} = \dfrac{9}{15} = \dfrac{3}{5}$ attacks per yr

   (b) Find the average rate of change in A from 1955 to 1960.

$\dfrac{A(10) - A(5)}{10-5} = \dfrac{8-5}{10-5} = \dfrac{3}{5}$ attacks per yr

(c) What kind of function do these data represent?

linear

(d) Find an equation that models this function.

$y = \frac{3}{5}x + 2$

3. Find a linear function with the following characteristics.

(a) One that goes through the points $(-2, 1)$ and $(0, -3)$.

$m = \frac{-3-1}{0-(-2)} = \frac{-4}{2} = -2$ $\quad y = -2x - 3$

(b) One with slope $1/2$ that goes through the point $(2, 3)$.

$y = \frac{1}{2}x + b \rightarrow 3 = \frac{1}{2}(2) + b \rightarrow 3 = 1 + b \rightarrow b = 2$

$y = \frac{1}{2}x + 2$

4. Take the lines from problem 3a and 3b and write them in point-slope form.

3a) $y - 1 = -2(x+2)$ or $y + 3 = -2(x)$

3b) $y - 3 = \frac{1}{2}(x-2)$

Optional Problems:

2.1: 1-20, 22, 27-32
2.2: All
2.3: All