Week in Review # 2

1. (a) $0 < x < 2$ and $x > 8$

   (b) $4 < x < 6$

   (c) $4 < x < 6$

   (d) $\dfrac{f(7) - f(3)}{7 - 3}$

2. Graph given in written solutions.

3. $\dfrac{f(4) - f(1)}{4 - 1} = \dfrac{-5 - 10}{4 - 1} = \dfrac{-15}{3} = -5$

4. (a) average rate of change $= \$250/\text{yr}$

   for the first two years of the account the ballance grew on average by $250 each year.

   (b) average rate of change $= \$200/\text{yr}$

   During the third and fourth years, i.e. from t=2 to t=4, the ballance of the account grew on average by $2000 each year.

5. (a) average rate of change $=$ $ -0.006190 per day

   From December 26 to January 16 the price per gallon of gas decreased by an average of $0.00619 each day.

   (b) average rate of change $= \$-0.006$

   From December 29 to January 8 the price per gallon of gas decreased by an average of $0.006 each day.

6. (a) initial value $= 37$
      relative rate of decay $= 13\%$

   (b) initial value $= 100$
      relative rate of growth $= 3.4\%$

7. (a) $y = 200(.5)^x$

   (b) $y = 1000(1.2)^x$

8. (a) $y = P_o(1.12)^x$ where P_o is the initial population. i.e. when $x = 0$.

   (b) $y = 200000x + P_o$ where P_o is the initial population. i.e. when $x = 0$.

   (c) $y = 100(0.96)^x$ where the 100 represents 100% of the drug in the body.

   (d) $y = -135x + P_o$ where P_o is the initial number of lollypops.

9. the two points are $(2, 300)$ and $(5, 2100)$

   $y = 81.98276498(1.912931183)^x$

10. formula $y = 75(0.9175)^x$

    (a) 57.92679mg

    (b) 26.68911mg

11. the points $(0, 100)$ and $(7, 50)$ give the formula
    $y = 100(0.9057236643)^x$

    (a) 7432997%

    (b) The relative rate of decay is 9.4276336%. Since this is less than 12% this pesticide is not approved.

    (c) 14 days.