Math 107 – Test 1 – Fall 2010

1. Henry Aaron played major league baseball starting in 1954 until he retired at the end of the 1976 baseball season. He broke Babe Ruth's lifetime home run record. In the table to the right the value of t is the season number with 1 corresponding to 1954 and H is the cumulative number of home runs he had by the end of that season. Use the table to answer each of the following questions.

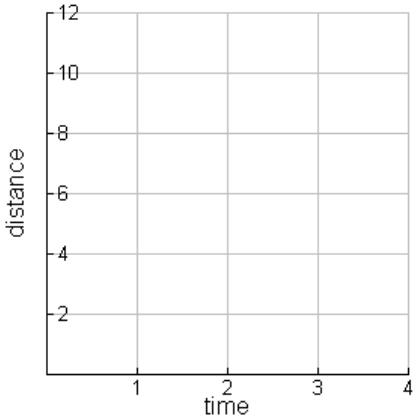
Season number, t	1	4	7	10	13	16	19
Home runs, H	131	110	219	342	412	554	673

   a) Find the value $f(10)$. (2 points)
   b) Find the value for t when $f(t) = 219$. (2 points)
   c) Find the average rate of change in H from year 7 to year 16. (3 points)
   d) Find the equation of the line that goes through (4, 110) and (16, 554). Show your work. (4 points)

2. The profit, in dollars, of selling n items is given by $P(n) = 0.98n - 3000$.
   a) Identify the slope and explain its meaning in practical terms. (3 points)
   b) Identify the y-intercept and explain its meaning in practical terms. (3 points)

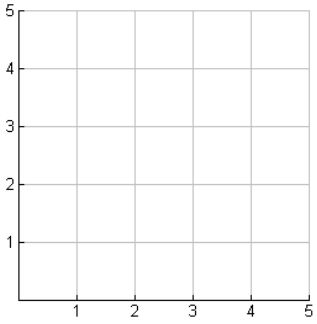
3. Find the formula for each of the linear functions described below:
   a) Find the equation of a linear function that is parallel to the line $y = 3x + 10$ and goes through the point (6, 2). (4 points)
   b) The horizontal line through (4, 5) (3 points)

4. Use the grid pictured to the right to sketch a graph which matches the following story. Your graph should have distance, d, from home as a function of time, t. Tom gets up late on Saturday morning and decides to ride his bike to his favorite restaurant ten miles away. He rides at a steady pace and arrives after one hour. He takes an hour to eat a leisurely lunch and afterwards rides home much slower than before. (3 points)



5. If F is a decreasing function, what can you say about $F(-2)$ compared to $F(2)$? (3 points)

6. In the table listed to the right there are four columns of data, *a, b, c,* and *d*.
   a) Plot the data points (*a, b*) on the graph provided. Decide if *b* is a function of *a*. (4 points)
   b) Decide if *d* is a function of *c*. Carefully explain your reasoning. (4 points)



a	*b*	*c*	*d*
1	1	2	4
2	2	3	3
3	2	3	2
4	3	4	1

7. Are the following statements true or false? Give an explanation for your answer. (2 points each)
   a) If *Q* is a function of *P*, then *P* is a function of *Q*.
   b) If two lines never intersect then their slopes are equal.
   c) If the correlation coefficient is -1, then the data is not very linear.
   d) If a line has the equation $3x + 2y = 7$, then the slope of the line is 3.