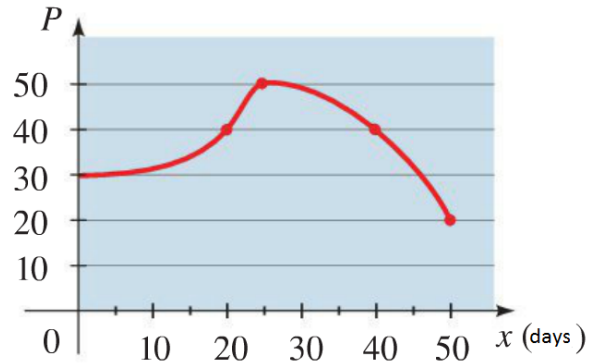**Name:** ———————————————————————————   ——————— / 25

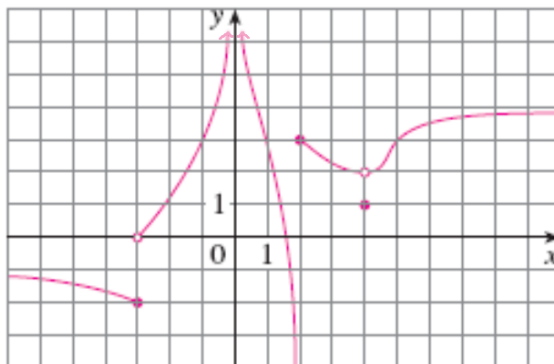No aids (calculator, notes, text, etc.) are permitted. Show all work for full credit.

1. **[5 points]** The graph below shows the population P of mice in a particular garden over the course of 50 days. Give answers to the following in correct units.

   a. Find the number of mice on days 25 and 40.

   b. Find the average rate of change of the population from $x = 25$ to $x = 40$.

   c. Find the average rate of change of the population during the entire period.

2. **[6 points]** Compute the following limit. Justify your answer with a sentence or two.

$$\lim_{x \to 2^+} \frac{6x}{2-x} = \boxed{}$$

3. [9 points] Use the graph of the function of $f(x)$ to answer the following questions.

a. $\lim\limits_{x\to 4} f(x) =$ _____

b. $\lim\limits_{x\to 2^-} f(x) =$ _____

c. $\lim\limits_{x\to -1} f(x) =$ _____

d. $f(-1) =$ _____

e. $f(4) =$ _____

f. $f(-3) =$ _____

g. $\lim\limits_{x\to -3^-} f(x) =$ _____

h. $\lim\limits_{x\to -3^+} f(x) =$ _____

i. $\lim\limits_{x\to -3} f(x) =$ _____

4. [5 points] Suppose the distance traveled by a car from time $t = 0$ minutes is given by $d(t) = t + t^2$ where distance is measured in miles.

a. Compute the average speed from time $t = 1$ to time $t = 3$ minutes.

b. Compute the average speed from time $t = 1$ to time $t = 2$ minutes.

c. What goes wrong in the previous computations if you try to compute the exact speed at time $t = 1$ minutes by computing an average speed from time $t = 1$ to time $t = 1$?