Writing Equations of Piecewise Functions

Notes #1-3

1. Mr. Smith is working at McDonalds. He gets paid $12 an hour. If he works overtime he gets time and a half. If Mr. Smith worked 40 hours in one week and then 45 hours in the next, how much did he get paid for the 1st and 2nd week?
   a. Write a function representing this situation.
   b. Graph the function.

2. Your favorite dog groomer charges according to your dog's weight. If your dog is 15 pounds and under, the groomer charges $35. If your dog is between 15 and 40 pounds, she charges $40. If your dog is over 40 pounds, she charges $40, plus an additional $2 for each pound over 40.
   a. Write a piecewise function that describes what your dog groomer charges.
   b. Graph the function.
   c. What would the groomer charge if your cute dog weighs 60 pounds?

3. A monsoon storm in Tucson poured rain in July. Write a piecewise function that represent the total amount of rainfall over time.

   At 2 pm it started raining at a rate of 2 inches per hour. It rained this hard for two hours. It then rained 3 inches per hour for the next hour. After this the rain slowed to 1/2 inch per hour for the next two hours and then stopped.

   Use your equation to determine how much rain had fallen after 3.5 hours.

Classwork #1-5

1. A mechanic is paid $14.00 per hour for regular time and time and a half for overtime.
   a. Write a function for the weekly wage, W, where h is the number of hours worked in a week.
   b. Graph the function.
   c. Evaluate W(30), W(40), W(45) and W(50).

2. During a 9 hour snowstorm, it snows at a rate of 1 inch per hour for the first 2 hours, at a rate of 2 inches per hour for the next 6 hours, and at a rate of 0.5 inches per hour for the final hour.
   a. Write piecewise function that gives the depth of the snow during the snowstorm.
   b. Graph the function.
   c. How many inches of snow accumulated from the storm?

3. You plan to sell t-shirts as a fundraiser. The wholesale t-shirt company charges you $10 a shirt for the first 75 shirts. After the first 75 shirts you purchase up through 150 shirts, the company will lower its price to $7.50 per shirt. After you purchase 150 shirts, the price will decrease to $5 per shirt.
   a. Write a function that models this situation.
   b. How much to you pay for an order of 180 shirts?
   c. If you instead had to pay $10 per shirt no matter what the order size, how much more money would you have spent on 180 shirts?
   d. The club sells each shirt for $15. If you purchased 180 shirts to sell, how many must you sell in order to break even with your expenses?
   e. If you sell all 180 shirts, how much did the club raise?

4. During a hot day in July the temperature increases by 2 degrees every hour from 7am to 10 am. From 10 am to 5 pm the temperature increases 3 degrees every hour. For the next 2 hours it only increases half a degree each hour. The temperature then begins to drop. It was 80° at 7 am.
   a. Write piecewise function that gives the temperature from 7 am for the amount of time the temperature is increasing.
   b. Graph the function.

5. Come up with your own scenario for a piecewise function. It should have at least 3 equations. Write it out in a paragraph.
   a. Write a piecewise function that models your scenario.
   b. Graph your piecewise function.