Math II – Step Function HW

NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_PERIOD\_\_\_\_\_\_\_\_SCORE\_\_\_\_\_\_\_

1. 1. A theater company offers discounts based on the value of tickets purchased. The discounts are as follows:
   * 5% for purchases more than $0 and up to and including $20,
   * 10% for purchases more than $20 and up to and including $40,
   * 15% for purchases more than $40 and up to and including $60, and
   * 20% for purchases more than $60.
2. Write a function for this situation.

b) Graph. Label the axes.



1. A jewelry store offers reward coupons to its customers. A $2 reward coupon is awarded for each $20 spent. Write a function that represents the value of reward coupons awarded for up to $100 spent.
2. 3. A fundraising company bases the profit returned to organizations on the total value of products sold. The profit returned is calculated as follows:
   * $100 for sales more than $0 and up to and including $250,
   * $225 for sales more than $250 and up to and including $500,
   * $350 for sales more than $500 and up to and including $750,
   * $475 for sales more than $750 and up to and including $1000.
3. Write a function to represent this situation.

4. A department store offers store credit but has the following rules:

* + For a bill less than $15 the entire amount is due,
  + For a bill of at least $15 but less than $50, the minimum is due $15,
  + For a bill of at least $50 but less than $100, the minimum due is $20, and
  + For a bill of $100 or more, a minimum of 25% of the bill is due.

1. Write a piecewise function f(x) for the minimum amount due for the amount of the bill, x.

f(x) =

1. Is this piecewise function a step function? Why or why not?
2. Graph the function. Be sure to label the axes. 
3. Describe the rate of change when  . What does it mean in terms of the problem situation?
4. A customer comes in the store to pay the minimum amount on his bill of $100. The customer thinks he owes $20, but the cashier tells him he owes $25. Who is correct? Explain your reasoning.

5. A department store has an online site that customers can order from. The shipping rates are calculated as follows:

* + For a package that weighs no more than 10 lbs the cost is $5,
  + For a package that weighs more than 10 lbs but no more than 20 lbs the cost is $10,
  + For a package that weighs more than 20 lbs but no more than 30 lbs the cost is $15,
  + For a package that weighs more than 30 lbs but no more than 40 lbs the cost is $20,
  + For a package that weighs more than 40 lbs but no more than 50 lbs the cost is $25,

1. Write a piecewise function f(x) for the shipping cost for weight of the package, x.  
   f(x)=
2. Is this piecewise function a step function? Why or why not?
3. Graph the function. Be sure to label the axes.  
   