*Review 3.2 and 3.3(****Key****)*

1. Each graph displays the graph of a basic function and its transformation, which appears

 **boldfaced**. Assume each tick mark represents 1 unit. Identify the basic function,

 and write the formula,, for the bolded function.

 a. b.

  ****

 **a.** ; **b. ;**

2. State the basic function and describe the transformations: .

 **Basic function:**

 **Transformations:**

 **Horizontal shift, left 5; vertical shift, down 7; vertically stretched by a factor of 3.**

3. Calculate the difference quotient for .

***Difference Quotient formula:***

 **First, calculate : Caution:**

4. Let . Calculate the average rate of change from [3, 6].

 **The average rate of change from *x*1 = 3 to *x*2 = 6 is given by**

 ****

 **Begin by finding the values of (*x1*) and (*x2*).**

 **= 57 and  = 204**

 ** 49**

5. a. Graph the given function. b. Find .

 **a. Graph:**

 **Construct the graph of The function restricts the -values to**

  

 **Construct the graph of The function restricts the -values to**

  

 **The piecewise-defined function's graph is displayed next:**

****

 **Observe that the restricted subdomains on the given function guarantee that there is no**

 **more than one output for each input (graph passes the vertical line test).**

 **b. Evaluate the piecewise-defined function at .**

 **Since , the formula that applies is , which has the subdomain .**

6. A part-time employee gets $12 per hour for working up to 20 hours per week. The employee gets $10.25 per hour plus a bonus of $8 a week for working more than 20 hours to a maximum of 32 hours a week. Write a piecewise-defined function that represents the weekly salary, , for hours.

**"$12 per hour for working up to 20 hours per week"**

 **Equivalent to for**

**"$10.25 per hour plus $8 a week for working more than 20 hours to a maximum of 32 hours"**

**Equivalent to for**

 **Therefore, the piecewise-defined function is:**