*Review 1.4-1.5(****Key****)*

1. Given the graph that follows, answer the following:

 a. Find *f*(4) b. Find the input(s) when *f*(*x*) = 4 c. Find the value(s) of *x* for which *f*(*x*) = 0 d. Estimate the increasing and decreasing intervals.

 e. For what *x*-value(s) is *f*(*x*) 0? *f*(*x*) 6? Write your answers using interval notation.

 f. Estimate the domain and range from the graph. Write your answers using interval notation.



 **a. *f*(4) = 6**

 **b. *f*(*x*) = 4 when *x* = 2 and *x* = 1**

 **c. *f*(*x*) = 0 for *x* =3 and *x* = 2**

 **d. Increasing decreasing**

 **e. *f*(*x*) 0 for ; *f*(*x*) 6 for**

 **f. Domain ; Range**

2. The graph below shows the path of a model space rocket launched upward from the ground at

 an initial velocity of 128 feet per second. Its height, *h*, at *t* seconds, can be modeled by

 .

 

 a. Use the graph to evaluate *h*(6.5) and explain its meaning in the context of the problem.

 ***h*(6.5)** **≈ 150; after 6.5 seconds, the model rocket's height going down is approximately 150 ft**

 b. Find the horizontal intercepts and explain the difference between these coordinates in terms of

 the problem.

 **(0, 0) and (8, 0); (0, 0) represents the time and height when the rocket was launched and (8, 0)**

 **means that the rocket landed at ground level (a height of 0 feet) after 8 seconds.**

 c. State the ordered pair associated with *h*(4) = 256, locate the corresponding point on the graph and

 explain its meaning in the context of the problem.

 **(4, 256); after 4 seconds, the model rocket reaches a maximum height of 256 feet.**

3. In 2009, Verizon Wireless was offering a $39.99 per month plan which included 450 anytime

 minutes. If the customer exceeded 450 minutes, the monthly bill would include a $0.45 per

 minute overage charge. As of 2014, new more practical plans were being offered.

 a. Suppose that the 2009 cell phone total charge can be modeled by a linear function. Find the

 equation of the linear function that models this problem.

**Let *y* = total charge and *x* = minutes.**

 **The function is: *y* = 39.99 + 0.45*x******or*** ***f*(*x*) = 39.99 + 0.45*x***

 b. Find the total charge for 12 minutes after the allowed minutes.

 ***y* = 39.99 + 0.45(12)**=**$45.39**

4. Find the equation in slope-intercept form of the line that passes through (1, 4) and has the following properties:

 a. Parallel to the line passing through (3, 6) and (4, 8).

 **Parallel implies equal slopes. First, we find the slope: *m* =  =  =**

 **Using the point-slope formula, we have:**

 **with *m* = 2 and**

 b. Perpendicular to *x* + 4*y* = 8.

 **First, we find the slope by rewriting the given equation in slope-intercept form:**

 **Therefore, *m***

 **Perpendicular implies slopes that are negative reciprocals of each other. The perpendicular**

 **line will have slope *m* = 4.**

 **Using the point-slope formula, we have:**

 **with *m* = 4 and**

5. True or false: *y* = 3 and *y* = 1/3 represent perpendicular lines. Explain your decision.

 **Graph the lines and you will find the answer!**