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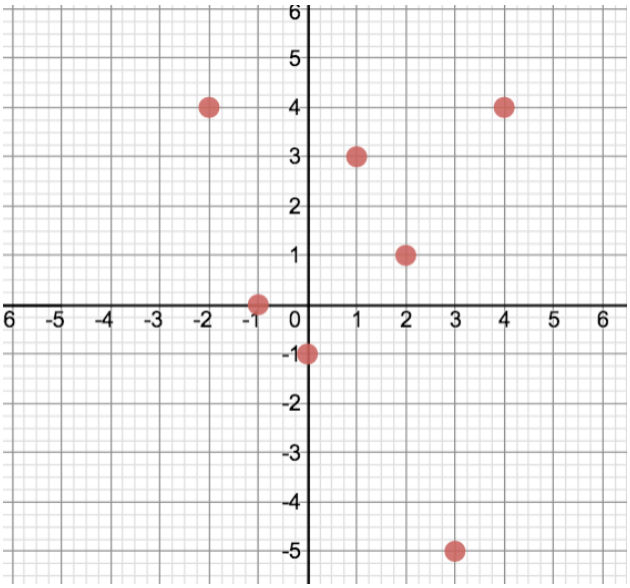
Name: _____ Date : _____

IM 3 Quiz 1.1 – Function Basics
Teacher: Mr. Santowski and Mr. Smith

Score:_____

1. Here is a graph of a relation (defined by a scatter plot).

(7 marks)



a. State domain and range of this relation.

(2M)

b. Evaluate f(2)

(1M)

c. Solve f(x) = 4 for x.

(1M)

d. What does f(3) = -5 mean, given this graphic representation?

(1M)

e. Ms. A would like to makes changes to this graph, such that this graph now shows a relation that is NOT a function. Provide ONE change that Ms. A could make to this graph and explain why the NEW graph now shows a non-function.

(2M)

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2. In this question, you will work with algebraic representations of functions, specifically the linear function $f(x)=\frac{3}{4}x+2$ and the quadratic function $g(x)=-2(x+3)^2-1$.

(11 marks)

Working with the **linear** function, $f(x)=\frac{3}{4}x+2$:

a. State the domain and range of $f(x)=\frac{3}{4}x+2$ **(2M)**

b. Evaluate $f(8)$ **(2M)**

c. Evaluate $f(B+1)$. Simplify your final answer. **(1M)**

d. Solve $f(x)=-14$ for x. **(2M)**

Now, working with the **quadratic** function, $g(x)=-2(x+3)^2-1$:

e. State the domain and range of $g(x)=-2(x+3)^2-1$ **(2M)**

f. Evaluate $g(5)$ **(2M)**

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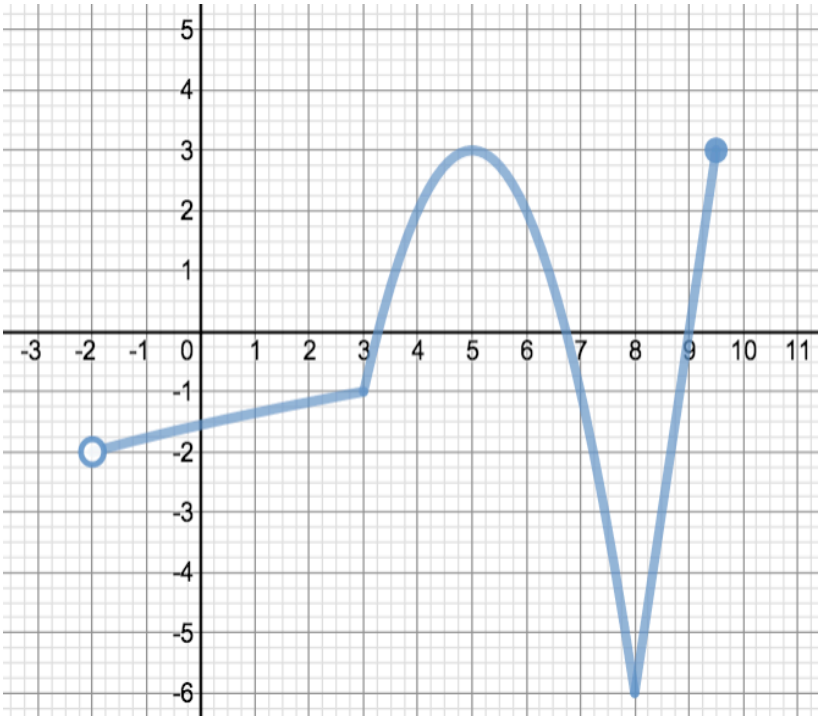
3. The following function concept questions are based upon a graphic representation of functions. I have provide you with a graph of a function, $y = H(x)$.

(10 marks)



a. State the domain of $y = H(x)$. Use proper notation (or use words if you need to).

(2M)

b. Find $H(3)$.

(1M)

c. Is $H(1+\pi)$ positive or negative. Explain how you determined your answer.

(2M)

d. For what values of x is H(x) = -1?

(2M)

e. What is the graphical significance of H(x) = 0?

(1M)

f. For what values of x is H(x) < 0?

(2M)

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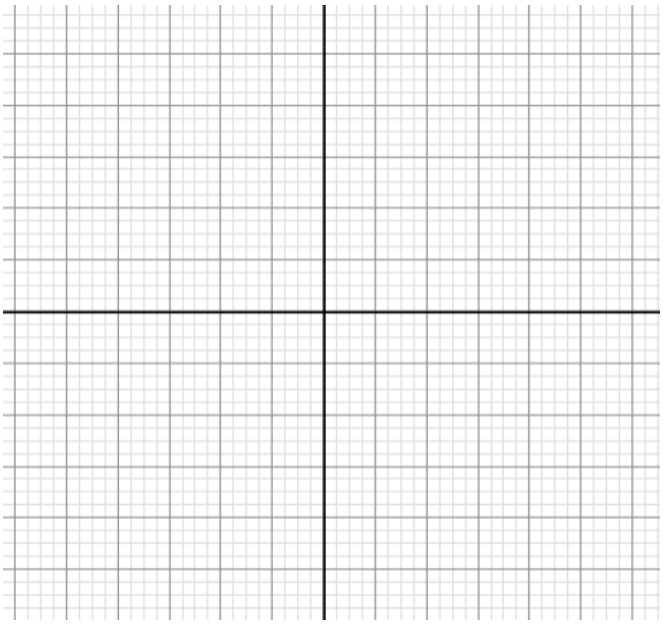
4. In this question, you will work with the linear functions and their graphs.

(9 marks)

a. Graph the function $f(x) = 2 - \frac{1}{2}x$, given the restricted domain of $\{x \in R \mid -2 < x \leq 4\}$ or (-2,4].

(3M)

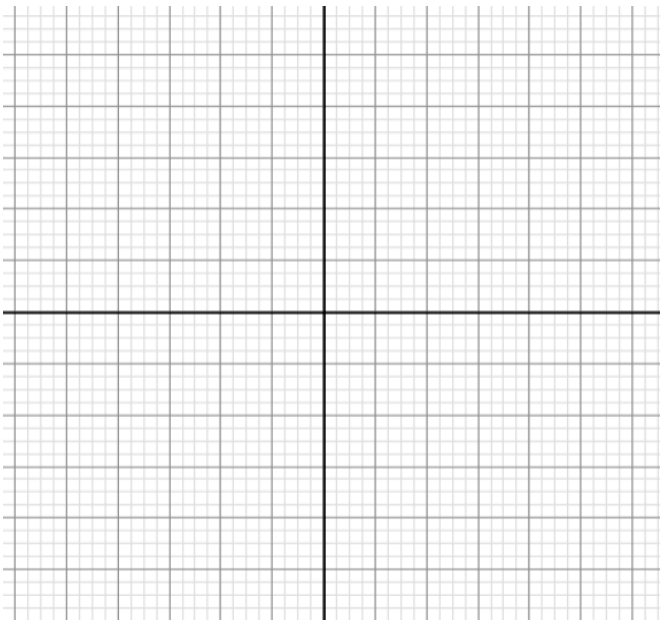


b. Since the domain is restricted, so must be the range. State the range of $f(x)$. Use proper notation.

(2M)

c. Now work with the linear function $g(x) = 2x - 5$. Graph this linear function given the restricted domain of $\{x \in Z \mid -2 \leq x < 3\}$.

(3M)



d. Since the domain is restricted, so must be the range. State the range of $g(x)$.

(1M)

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5. In this question, you will produce a graph of a **relation** that meets the following criteria:

(5 marks)

a. The y-intercept is 2 **(1M)**
b. The range is $\{y \in R | y > 0\}$ **(1M)**
c. The domain is $\{x \in R | -2 < x \leq 1 \quad \cup \quad x > 4\}$ **(2M)**
d. The relation is NOT a function. **(1M)**