**10E:** PS 1 **I Am:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This is your first problem set assignment. Please do these problems in your math notebook. To earn full credit for your HW you are expected to make an honest attempt at every problem and have work to show for it. Please work with your peers but remember working together is not copying their work. We will discuss these problems next class.

3

*AT’s*

8

**1.** Alan’s project for the math fair was a magnificent black box that he called a *function* machine. If you put 3 into his machine the output is 8. If you put 10, it gives you 29, and if you put in 20 it gives you 59.

1. What would the machine do to 5? To –1? To *x*? Drawing a table may help.

f(x)=3x-1

1. Write a rule for Alan’s machine.

f(x)=3x-1

Diagram, engineering drawing

Description automatically generatedDiagram, engineering drawing

Description automatically generated

**2**. The set of all possible inputs of a function is called the *domain*. This set consists of every input *x* for which the function is defined.

Similarly, the set of all outputs of a function is called the *range*. This set contains every output *y* that the function can generate.

Name the domain and range of each function to the right.

A: domain∈ {-1,1,2} range ∈ {-2,1,2}

B: domain:-1<=x<1 range-1<=x<2

C: domain -1<=x<=1 range -1<=x<=2

D: domain -2<x<=2 range -2<=x<1

**3**. The following represent *functions*, where D = the *domain* and R = the *range.*

*Diagram

Description automatically generated*

The following are not *functions*:

Diagram

Description automatically generated

Diagram

Description automatically generated

Which of the following are functions? Explain your reasoning.

Diagram, engineering drawing

Description automatically generated

**4**. Alan made a more complicated function machine. The inner workings of the machine are visible in the diagram at right. What will be the output if:

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1. 3 is dropped in?
2. –4 is dropped in?
3. –22.872 is dropped in?

Do you remember any methods to make a problem like this speedy?

**5**. (Continuation) If the number 1 is the output from Alan’s latest machine how can you find out what number was dropped in? Find the number or numbers that could have been dropped in.

**6**. Solve the following equations for *y*.

1.  (b) Shape

   Description automatically generated with low confidence (c) Shape

   Description automatically generated with medium confidence (d) Shape

   Description automatically generated with low confidence

**7**. The following represent *functions*:

Text

Description automatically generated

Text

Description automatically generated with medium confidenceThe following are not *functions*:

You guessed it, now it is your turn to decide which of the following are functions. Explain your reasoning.Text, letter

Description automatically generated

**8**. Find each of the values below. Justify your answers by writing the equivalent exponential form.

A close up of a logo

Description automatically generated

Text, letter

Description automatically generated

**9**. Eugene and George are working on their Algebra homework together. Eugene asks George to look over his solution to #18 because he is concerned it seemed too easy. Did Eugene solve it correctly? Eugene’s work is shown on the right.

**10**. Simplify each expression below:

Shape

Description automatically generated with medium confidence

MYP Questions connected to this problem set:

F: What are domain and range, and how do I find them?

F: What are the steps for finding an inverse function?

C: What is the definition of a function?

C: What are the different ways of representing a function?

C: How can a function be thought of as a machine?

R: What are the rules for simplifying exponential expressions

R: What is the definition of a logarithm?