

1. Here is a graph of a function. Use the graph to answer the following questions.

(11 marks)

a. State the domain and range of this function.

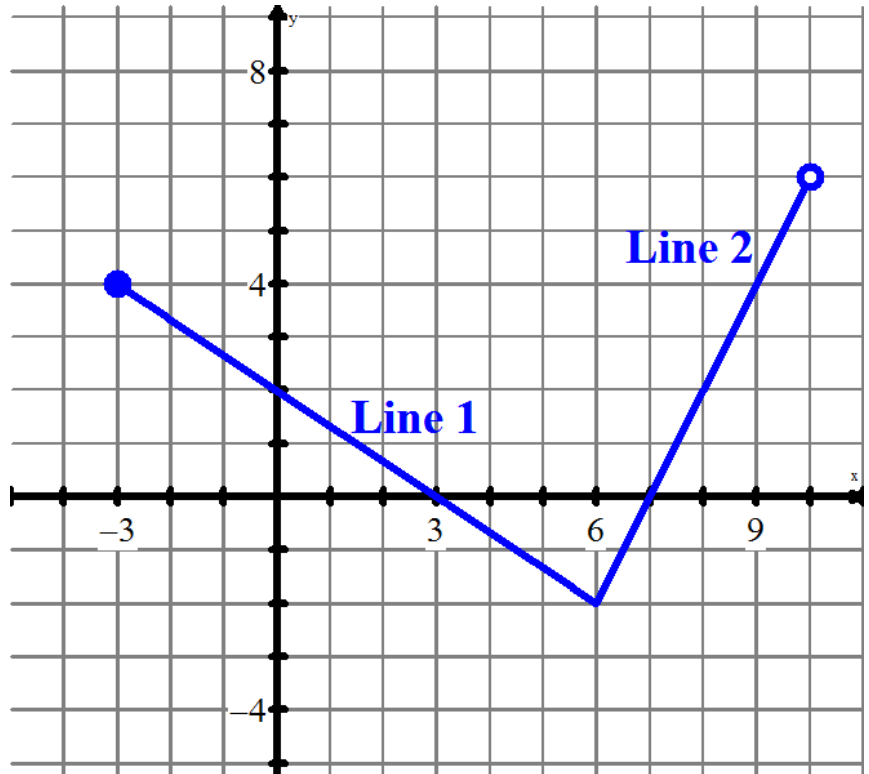
(5M)

b. Evaluate $f(7)$.

(1M)

c. Determine the value(s) of x if $f(x) = 4$.

(2M)

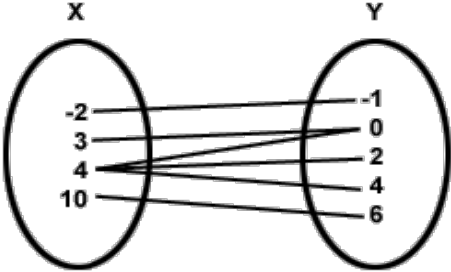


d. A third line has the equation $6x - 2y = -5$. **EXPLAIN** how you know whether or not the third line is more steep or less steep than Line 2.

(3M)

2. From the following representations of relations, state their (i) domain, (ii) range, & (iii) whether they are functions or not. If the relation is not a function, give a specific reason why it is not.

(6 marks)

<p>(a) A relation is defined by the following ordered pairs:</p> <p style="text-align: center;">$\{(2,4), (-1,4), (6,2), (3,3), (1,1)\}$</p>	Domain:	Range:	Function or Not?
<p>(b) A relation is defined & illustrated by the mapping diagram below:</p> 	Domain:	Range:	Function or not?

3. A line passes through points A(-2,4) and the line has a slope of $\frac{2}{5}$. Write the equation of this line in:

(6 marks)

(i) point-slope form

(ii) slope intercept form

(iii) standard form

4. The CAC Freshman class council wishes to have a fundraiser event. The class wants to buy a number of T-shirts costing 40 LE and a number of wrist bands costing 8 LE. The class has a total of 4,000 LE to spend.

(14 marks)

- a. If x represents the number of T-shirts bought and y represents the number of wrist bands bought, complete the table below. **(2M)**

Number of T-shirts, x	0	
Number of wrist bands, y		0

- b. Using your two points, write a linear equation in $y = mx + b$ form that gives the number of wrist bands that can be bought as a function of the number of T-shirts bought. **(3M)**
- c. Explain what the slope in this equation means. **(1M)**
- d. Using your equation from (b), determine the number of T-shirts that can be bought if 200 wrist bands are bought. **(3M)**
- e. Write the linear equation in standard form ($Ax + By = C$). **(2M)**
- f. State a reasonable domain and range for this linear model. Explain your reasoning. **(3M)**

5. Mr. S. is trying to find a linear equation for the cost of his tutoring business, Maniac Math Mentors. He charges an initial, start-up cost as well as an hourly rate. His first client received 10 hours of tutoring and was charged 675 LE, while his second client received 17 hours of tutoring and was charged 1095 LE.

(7 marks)

- a. Write two ordered pairs, where the hours of tutoring are the independent variable and the charge is the dependent variable, that model the information given in the problem. **(2M)**
- b. Using these two points, write a linear equation that gives Mr. S.'s charge, C , as a function of the number of hours, h , that he tutors. **(3M)**
- c. What does the slope of this linear function represent? **(1M)**
- d. What does the y-intercept of this linear function represent? **(1M)**

6. The table below gives the number of hours spent studying for a math test (x) and the final exam grade (y).

(17 marks)

X (hours)	2	5	1	0	4	2	3
Y (grade)	77	92	70	63	90	75	84

a. Graph the data of this relation on the graph included on the following page.

(4M)

b. Is this relation also a function? Explain your answer.

(2M)

c. On your graph, draw the **approximate** line of best fit.

(1M)

d. Use **YOUR** line of best fit to determine:

(4M)

i. It's slope

ii. It's equation.

e. Use the linear equation you generated in Question 6d. to predict the exam grade of a student who studied for 6 hours.

(2M)

f. Use your graphing calculator to generate the equation for the line of best fit.

(1M)

g. Given the context for this data (hours studying & exam grades), state a reasonable domain and range would be for this relation. Explain your reasoning.

(3M)

IM2 Unit Test – Linear Functions

Name: _____

The graph below is for question 6, relating the number of hours spent studying for a math test (x) and the final exam grade (y).

