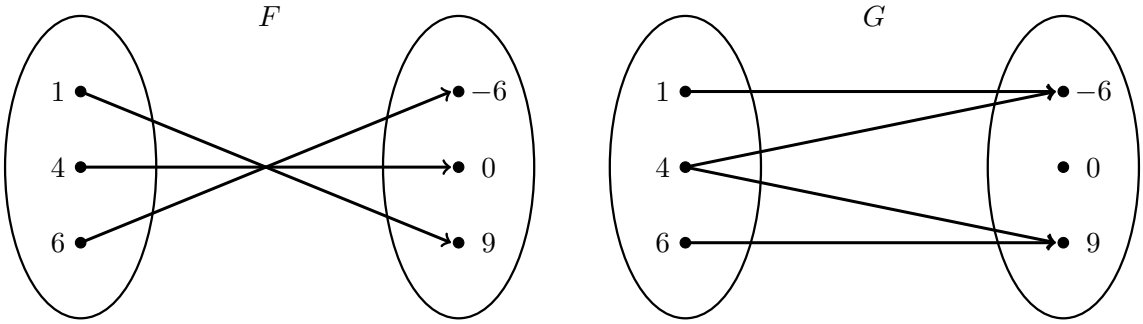
Name: _____
MATH 108
Fall 2021
HW 1: Due 09/28

"Clark Kent is Superman's critique on the whole human race."
–Bill, Kill Bill

Problem 1. (10pt) Two relations, F and G, are represented below. Are either F or G functions? Explain.



Problem 2. (10pt) Given the following tables, do $f(x)$ and $g(x)$ represent functions? Explain.

x	$f(x)$
1	3
2	6
3	9
4	2
5	5

x	$g(x)$
1	4
2	1
3	4
4	5
1	3

Problem 3. (10pt) Does the formula $f(x) := 2.31x + 9.55$ give a function? Explain. If it is a function, describe its graph.

Problem 4. (10pt) For each of the following, indicate whether the equation is a linear equation (T), or not (F).

(a) _____: $2x - 3y = 9$

(b) _____: $2x^2 + 5y^2 = 7$

(c) _____: $x = 5$

(d) _____: $x = 6 - y$

(e) _____: $y = x^2 + x + 1$

Problem 5. (10pt) For each of the following, indicate whether the function is linear (T), or not (F).

(a) _____: $y = 2x + 1$

(b) _____: $f(x) = 1 - 6x$

(c) _____: $y = x(2x + 1)$

(d) _____: $y = 2(x - 1)$

(e) _____: $f(x) = \frac{1}{3}x - 9$

Problem 6. (10pt) Given the data in the table below, is it reasonable to say that the data is linear? Explain.

x	$f(x)$
1	4
2	6
3	8
4	10
6	12

Problem 7. (10pt)

(a) Find the equation of the line through the points $(1, -5)$ and $(-2, 13)$.

(b) What is the slope and y-intercept of the line from (a)?

(c) Sketch the line from (a) as accurately as possible.

Problem 8. (10pt) Consider the line given by $f(x) = 6x + 5$.

(a) Find the y-intercept for this line.

(b) Find the x-intercept for this line.

(c) Is the point $(0, 1)$ on the line? Explain.

(d) Is the point $(-1, -1)$ on the line? Explain.