ALGEBRA 2 HONORS
PROBLEM SET #6

DUE DATE: SEPTEMBER 7, 2023

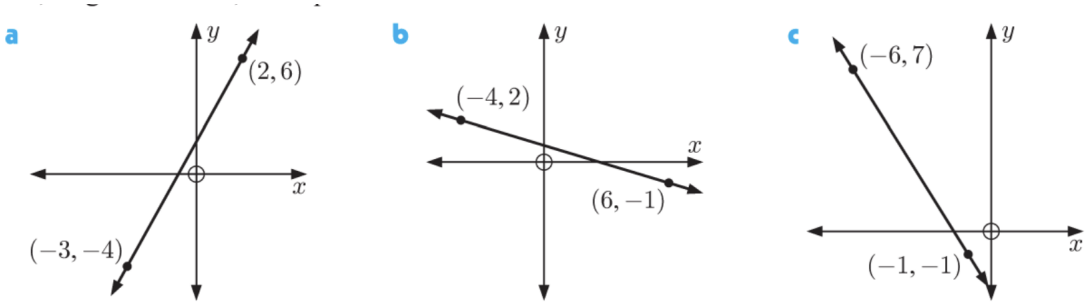
Question 1. Consider a sequence of numbers $2, 6, 10, 14, \ldots$

(a) Find the next three term in the sequence.
(b) Is this sequence arithmetic, geometric, or neither?
(c) Find a recursive form for this sequence.
(d) Find a closed form for this sequence (find the nth term).
(e) Find the 20th term in the sequence.

Question 2. Consider the sequence $(2, 9, 16, 23, 30, \ldots)$

(a) Is the sequence an arithmetic sequence? If so, what is the common difference?
(b) Find the closed formula for this sequence.
(c) Find the 100th term of the sequence.
(d) Prove that 828 is in the sequence by finding where it would be in the sequence.
(e) Is 2023 in the sequence?

Question 3. Find the equation of each line:

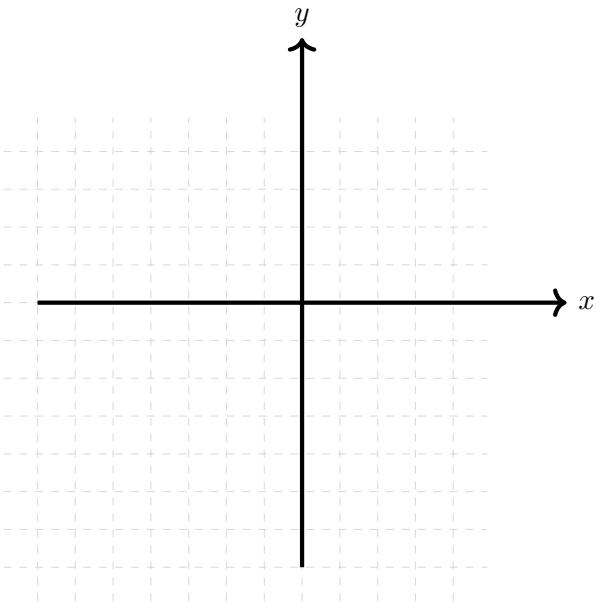


Question 4. Let $y = \frac{2}{3}x - 6$.

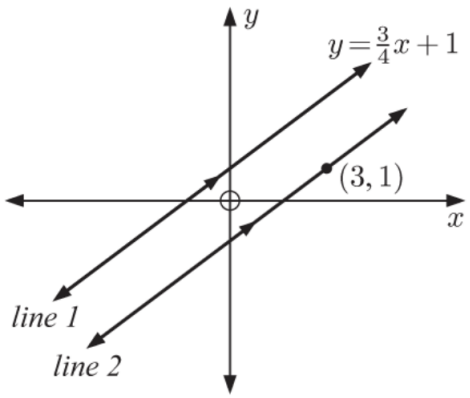
(a) What is the slope and what is the y-intercept?
(b) Determine whether or not the following points are going to be on the line:

$$(3, -4), \quad (7, -2), \quad (20, 23)$$

(c) Draw a graph of the line



Question 5. Below is the graph of two parallel lines.



(a) What is the slope of line 2?
(b) What is the y-intercept of line 2?

Question 6. Find the equation of the line that

(a) Is parallel to the line $y = 3x - 2$ and passes through $(1, 4)$
(b) Is parallel to $2x - y = -3$ and passes through $(3, -1)$
(c) Is perpendicular to $y = -2x + 1$ and passes through $(-1, 5)$
(d) Is perpendicular to $4x - 6 = 2y$ and passes through $(-2, -1)$

Question 7. Solve for all x that satisfy the equation

$$|2x - 3| = 7$$

Question 8. Solve for all x that satisfy the equation

$$|3x + 2| \geq 23$$