

NAME: _____
 Date: _____
 Period: _____

- Determine if the sequence is arithmetic. Write yes or no.
- 5, 9, 14, 20, ...
 $+4$
 $+5$
 $+6$
 No
 - 10, 22, 34, 46, ...
 $+12$
 $+12$
 $+12$
 Yes
 - 20, 10, 0, -10, ...
 -10
 -10
 -10
 D: -10

- Find the indicated term of each arithmetic sequence.
- $a_1 = 10, d = 6$; Find 42nd term
 $a_{42} = 10 + (42-1)6$
 $a_{42} = 10 + 241(6)$
 $a_{42} = 256$
 - 12, 15, 18, 21, ...
 $+3$
 $+3$
 $+3$
 D: 3

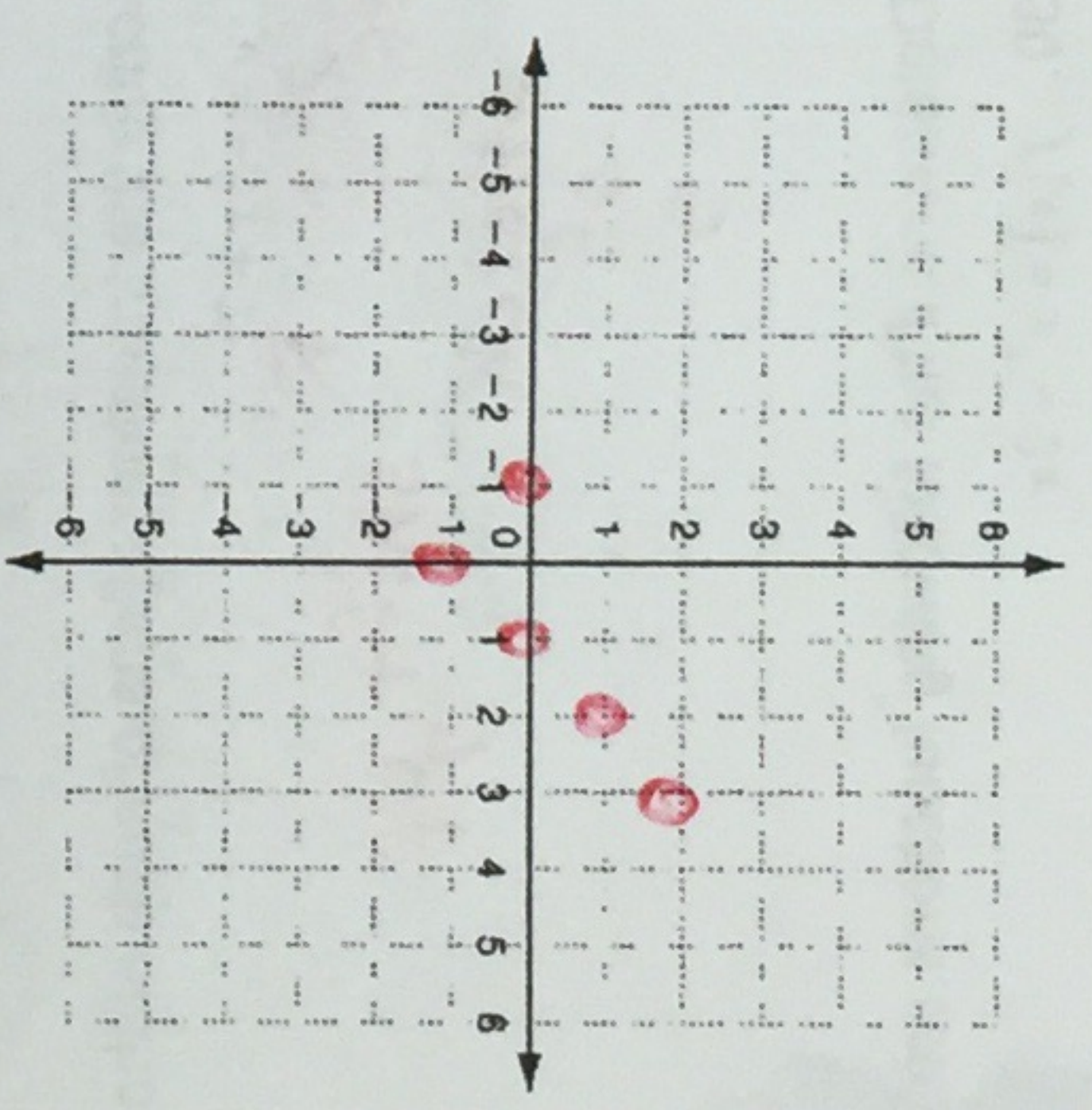
- Given a term in an arithmetic sequence and the common difference, find the explicit formula.
- $a_{27} = 59, d = -3$
 $a_{27} = 59 + (27-1)(-3)$
 $a_{27} = 59 + 26(-3)$
 $a_{27} = -19$
 - $a_{17} = -144, d = -3$
 $a_{17} = -144 + (17-1)(-3)$
 $a_{17} = -144 + 36(-3)$
 $a_{17} = -144 + 36(-3)$
 $a_{17} = -144 - 108$
 $a_{17} = -36 - 3n$

- $a_1 = 64, d = 7$
 $a_n = 64 + (n-1)(7)$
 $a_n = -27 + (n-1)7$
 $a_n = -27 + 7n - 7$
 $a_n = -34 + 7n$
- $a_1 = 64, d = 13$
 $a_n = 64 + (n-1)(13)$
 $a_n = -27 + (n-1)13$
 $a_n = -27 + 13n - 13$
 $a_n = -40 + 13n$

A swim pass costs \$30 for the first month. Each month after that, the cost is \$20 per month. Riley wants to swim for 12 months.

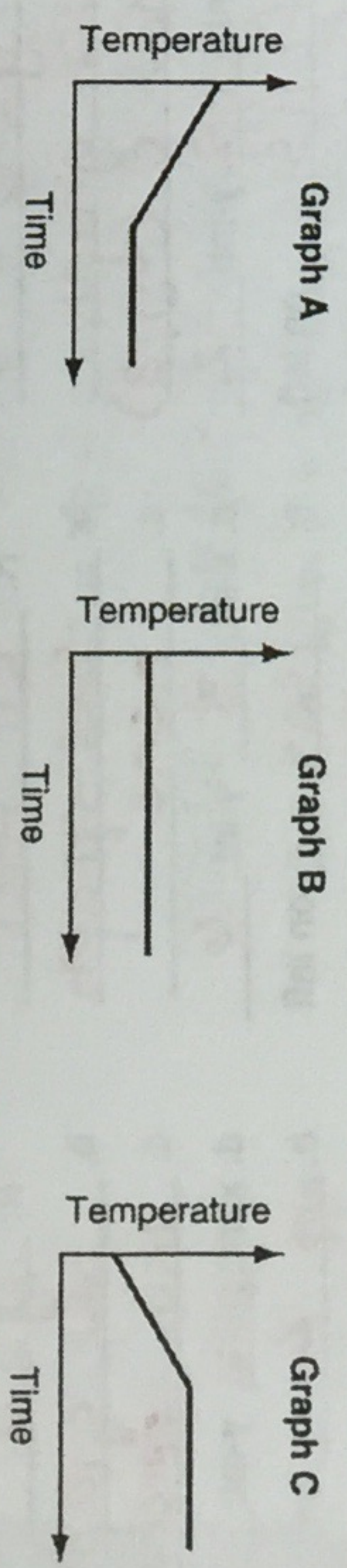
- The sequence for this situation is arithmetic. What is the first term of this sequence?
 30
- What is the common difference?
 20
- The 12th term will be the amount Riley spends for a one-year swim pass. Write the equation for finding the total cost of a one-year swim pass.
 $a_n = 10 + 20n$
 $a_{12} = 10 + 20(12)$
- What is the total amount of money Riley will spend for a one-year swim pass?
 $a_n = 30 + (n-1)(20)$
 $a_n = 30 + 20n - 20$
 $a_n = 10 + 20n$
 $a_{12} = 250$

Graph the function for the given domain.
 13. $y = |x| - 1$; D: $\{-1, 0, 1, 2, 3\}$



$$\begin{array}{r} 3 \\ 9 \overline{) 27} \\ \underline{-27} \\ 0 \\ \underline{-0} \\ 0 \\ \underline{-0} \\ 0 \\ \underline{-0} \\ 0 \end{array}$$

Choose the graph that best represents each situation.



- The temperature of the water in a glass remained constant. **B**
- The temperature of the water in a glass rose steadily for several hours until it reached room temperature, then remained constant. **C**
- The temperature of the water in a glass cooled down steadily with the addition of ice, then remained constant when all the ice had melted. **A**

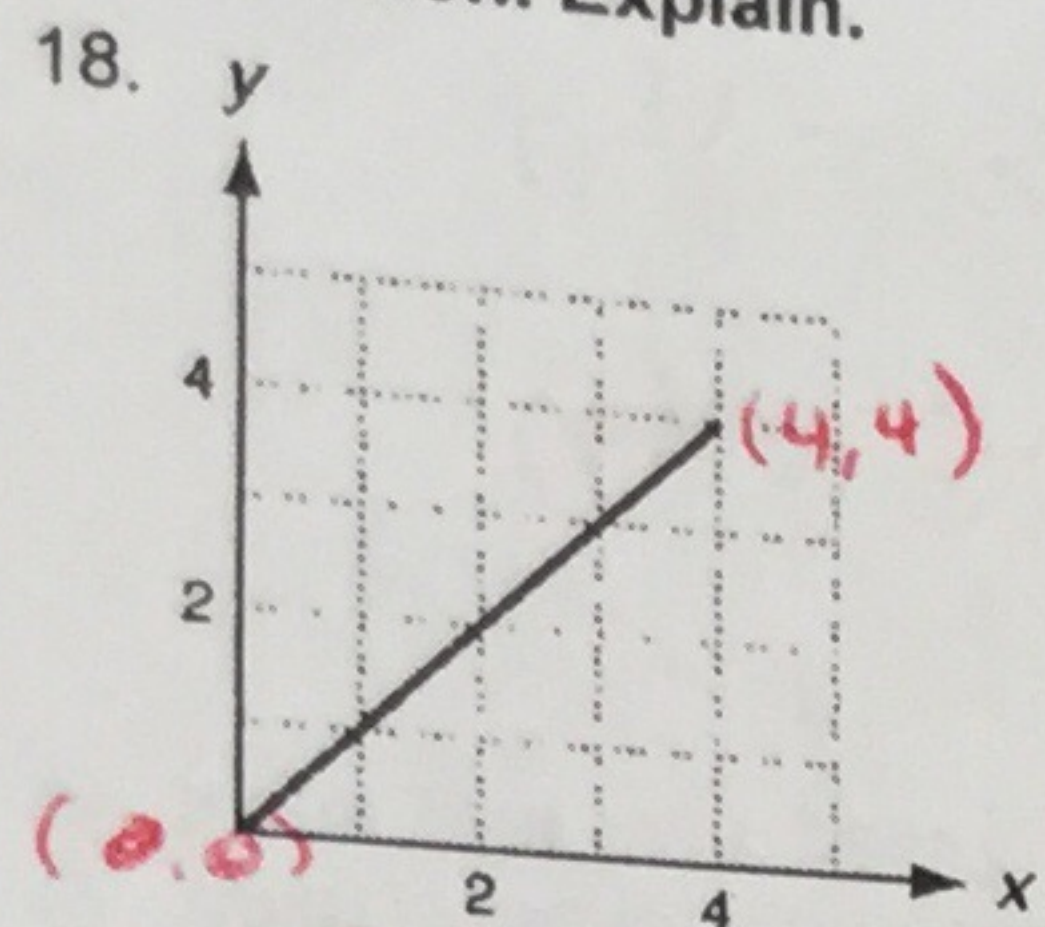
Express each relation as a table, as a graph, and as a mapping diagram.

- $\{(-2, 5), (-1, 1), (3, 1), (-1, -2)\}$

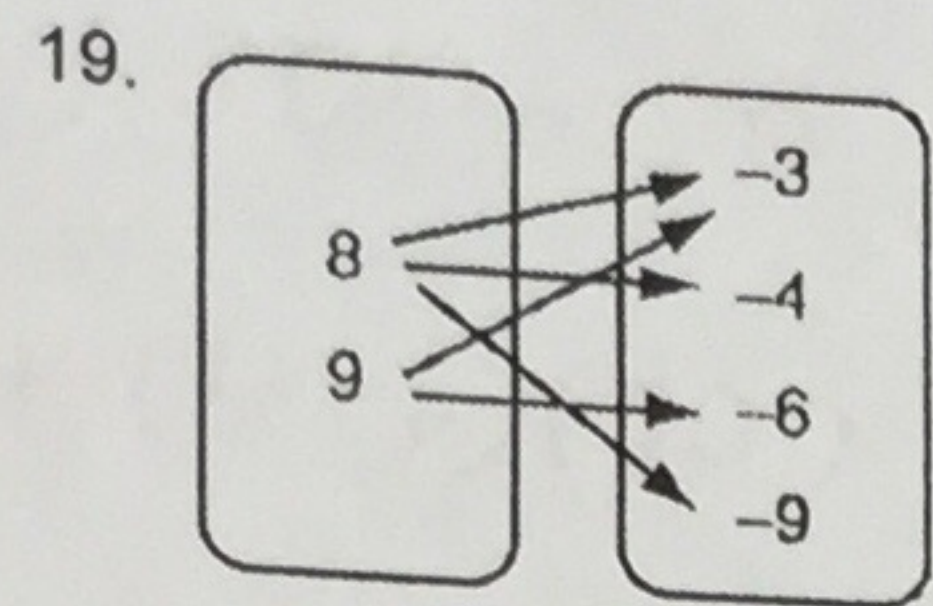
x	y
-2	5
-1	1
3	1
-1	-2

$$\begin{array}{r} -2 \quad -5 \\ -1 \quad 1 \\ 3 \quad -2 \end{array}$$

Give the domain and range of each relation. Tell whether the relation is a function. Explain.



D: $0 \leq x \leq 4$
 R: $0 \leq y \leq 4$
 Function? yes
 Explain: passes VLT



D: 8, 9
 R: -3, -4, -6, -9
 Function? NO
 Explain: x-values (inputs) have more than one y-value (output)

20.

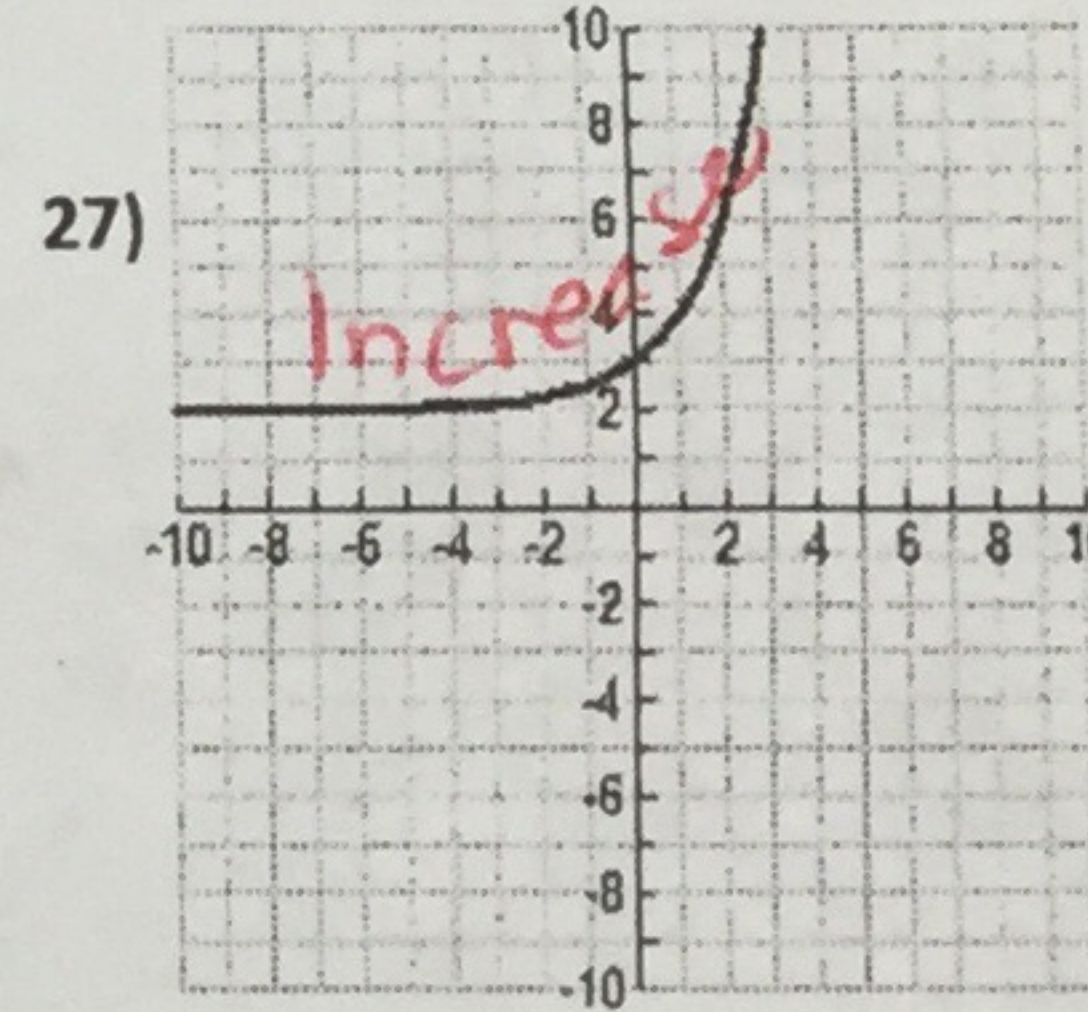
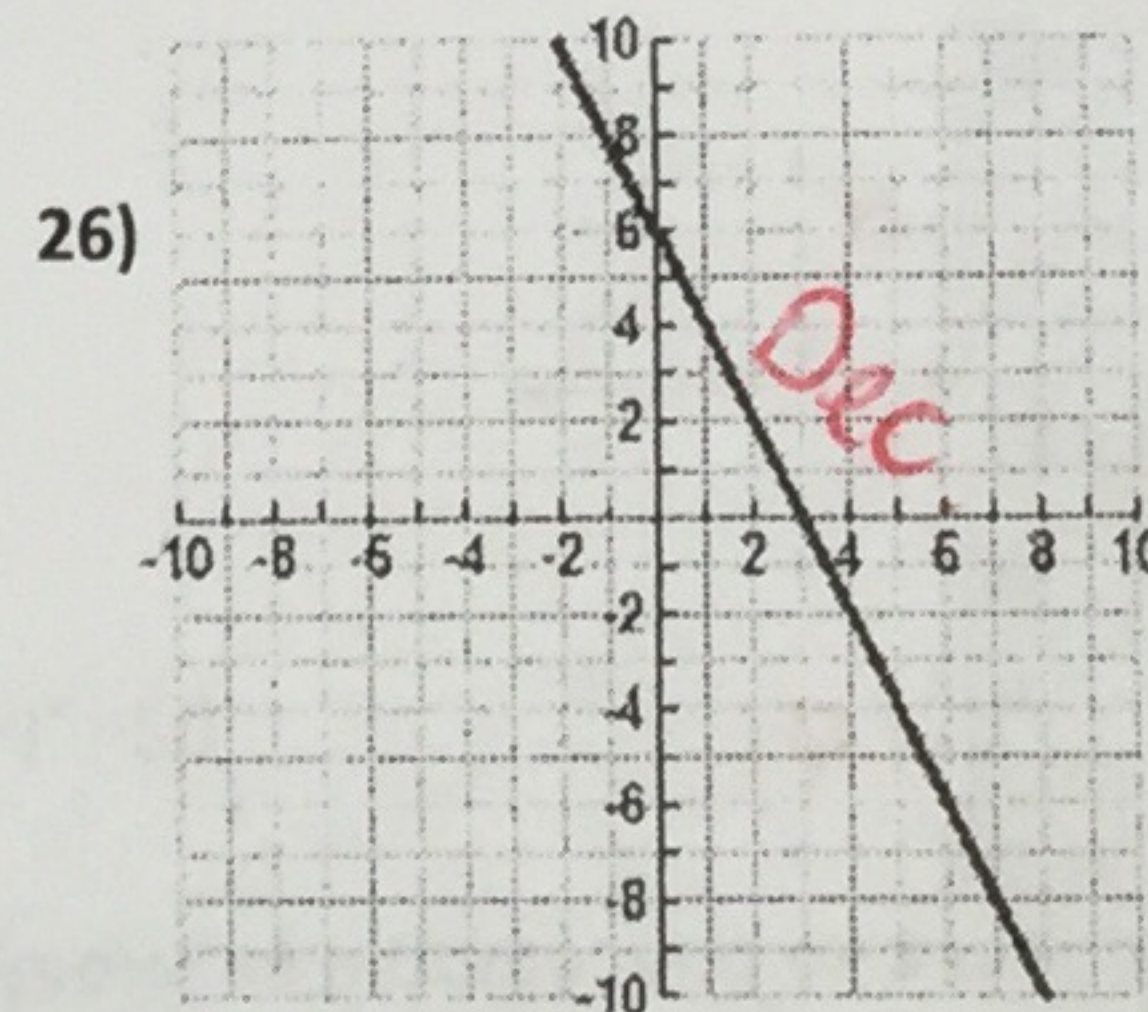
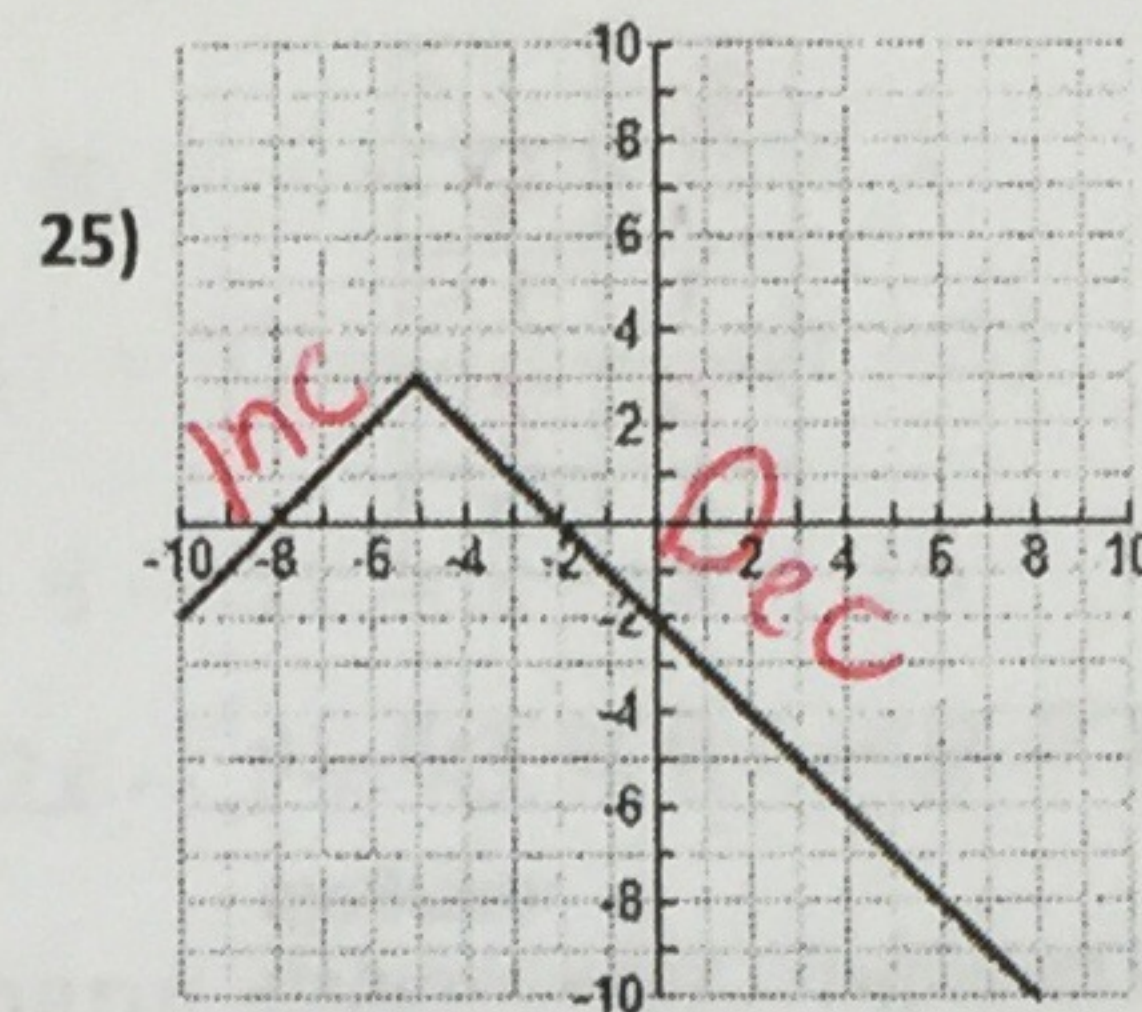
x	y
1	4
2	5
0	6
1	7
2	8

D: 0, 1, 2
 R: 4, 5, 6, 7, 8
 Function? NO
 Explain: x-values repeat

For each graph below, tell the following:

- a. Domain/Range b. Increasing or Decreasing Intervals c. Max/Min/None and where?

x, y int. End behavior



For each, write whether the given variable is *independent* or *dependent*.

21. Auto insurance costs increase with each accident and traffic violation.
- number of accidents/violations: independent
 - cost of auto insurance: dependent
22. Christian is buying several DVDs that cost \$12 each.
- total cost of the DVDs: dependent
 - number of DVDs purchased: independent

- a. D: all real a. D: all real a. D: all real
 R: $y < 3$ R: all real R: $y \geq 2$
 b. see graph b. see graph b. see graph
 c. max @ (-5, 3) c. none c. min. approaches 2
 d. x-int: -8, -2 y-int: -2 d. x-int: 3 y-int: 6 d. x-int: none y-int: 3
 e. falls on left e. rises on left e. app. 2 on left
falls on right falls on right rises on right

Evaluate each function for the given input values.

23. For $f(x) = x + 7$, find $f(x)$ when $x = 3$ and when $x = -5$. $f(3) = 3 + 7 = 10$; $f(-5) = -5 + 7 = 2$

Complete the following.

24. Marlena is making her own beaded bracelets. Each bracelet will have 10 beads. Write a function rule to describe the number of beads she will use. Find a reasonable domain and range for the function if Marlena makes up to 7 bracelets.

rule: $y = 10x$
 domain: 0, 1, 2, 3, 4, 5, 6, 7
 range: 0, 10, 20, 30, 40, 50, 60, 70

Describe the transformations of each of the following from the parent graph $y = x$.

28. $y = -3x + 7$
 ref. ↑ stretch of 3 shift up 7

29. $x + 4y = 12$
 $y = -\frac{1}{4}x + 3$
 ref. ↑ shrink of 1/4 shift up 3

Determine if the following functions are odd, even, neither.

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30. $f(x) = x^3 - 2x$
 $(1)^3 - 2(1) = 1 - 2 = -1$
 $(-1)^3 - 2(-1) = -1 + 2 = 1$
-1 1
odd

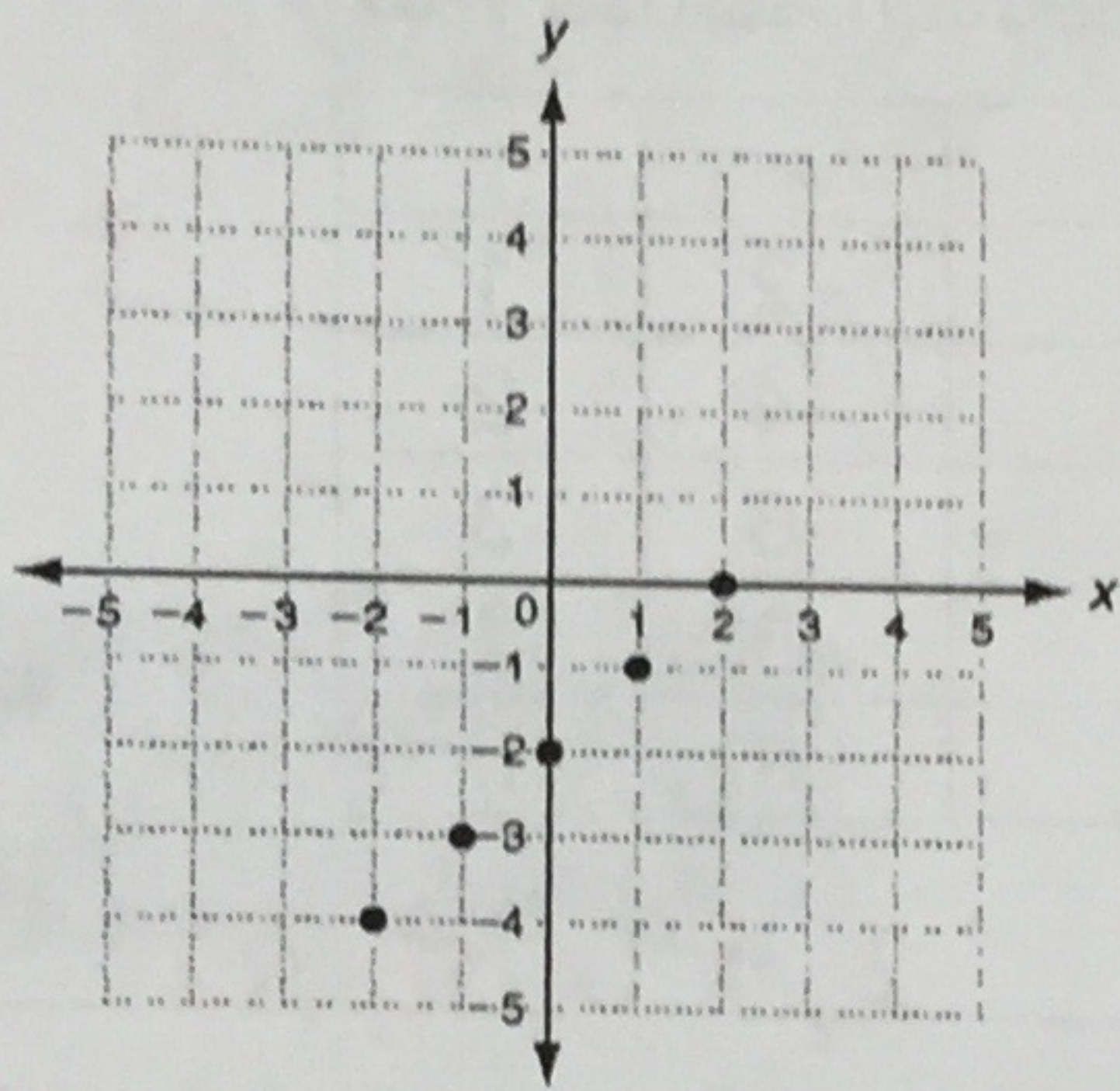
31. $f(x) = x^2 - 7$
 $1^2 - 7 = 1 - 7 = -6$
 $(-1)^2 - 7 = 1 - 7 = -6$
-6 -6
Even

Graphs and Transformations

Review

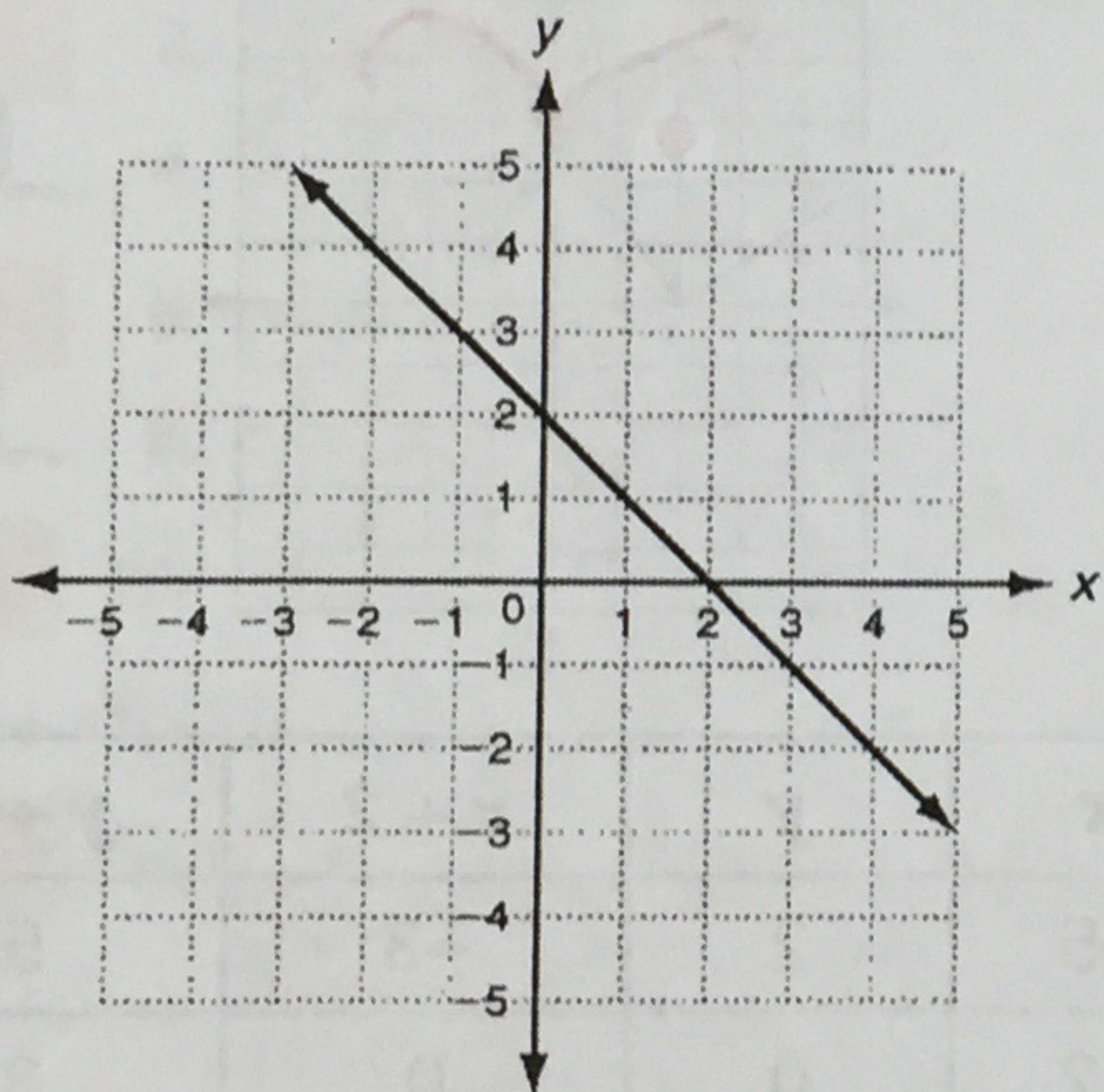
Select the best answer.

1. Which function is graphed for the domain $\{-2, -1, 0, 1, 2\}$?



- A $f(x) = x - 2$ C $f(x) = 2 - x$
 B $f(x) = x + 2$ D $f(x) = 2 + x$

2. Which function is graphed below?



- F $y = 2x$ H $y = 2 - x$
 G $y = 4x$ J $y = x + 2$

3. Which are the coordinates of the transformed point?

$(2, 1)$; vertical stretch of 2

- A $(1, 0.5)$
 B $(2, 2)$
 C $(4, 2)$
 D $(4, 1)$

4. Which completes the table of the transformed function?

Reflection across x-axis

x	y	
1	1	
2	4	
3	9	
4	16	
5	25	

y values change to opposite signs

F 25, 16, 9, 4, 1

G -1, -4, -9, -16, -25

H -1, -2, -3, -4, -5

J 5, 4, 3, 2, 1

5. What is the common difference in the arithmetic sequence $-3, -1, 1, 3, \dots$?

A -3 C 2

B -2 D 3

6. Which of the following is NOT an arithmetic sequence?

F 1, 2, 3, 4, ... H $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, \dots$

G 2, 2.5, 3, 3.5, ... J -2, 4, -6, 8, ...

7. What are the coordinates of the point $(1, 2)$ after a translation right 9 units and up 3 units?

$(x+9, y+3)$

A $(10, 5)$ C $(-8, 5)$

B $(10, -1)$ D $(4, 11)$

8. The graph of a function passes through the points $(2, 4)$ and $(6, -5)$. What are the coordinates of these points after the function has been reflected across the x-axis?

F $(-2, -4)$ and $(-6, 5)$

G $(-2, -4)$ and $(-6, -5)$

H $(2, -4)$ and $(6, 5)$

J $(4, 2)$ and $(-5, 6)$

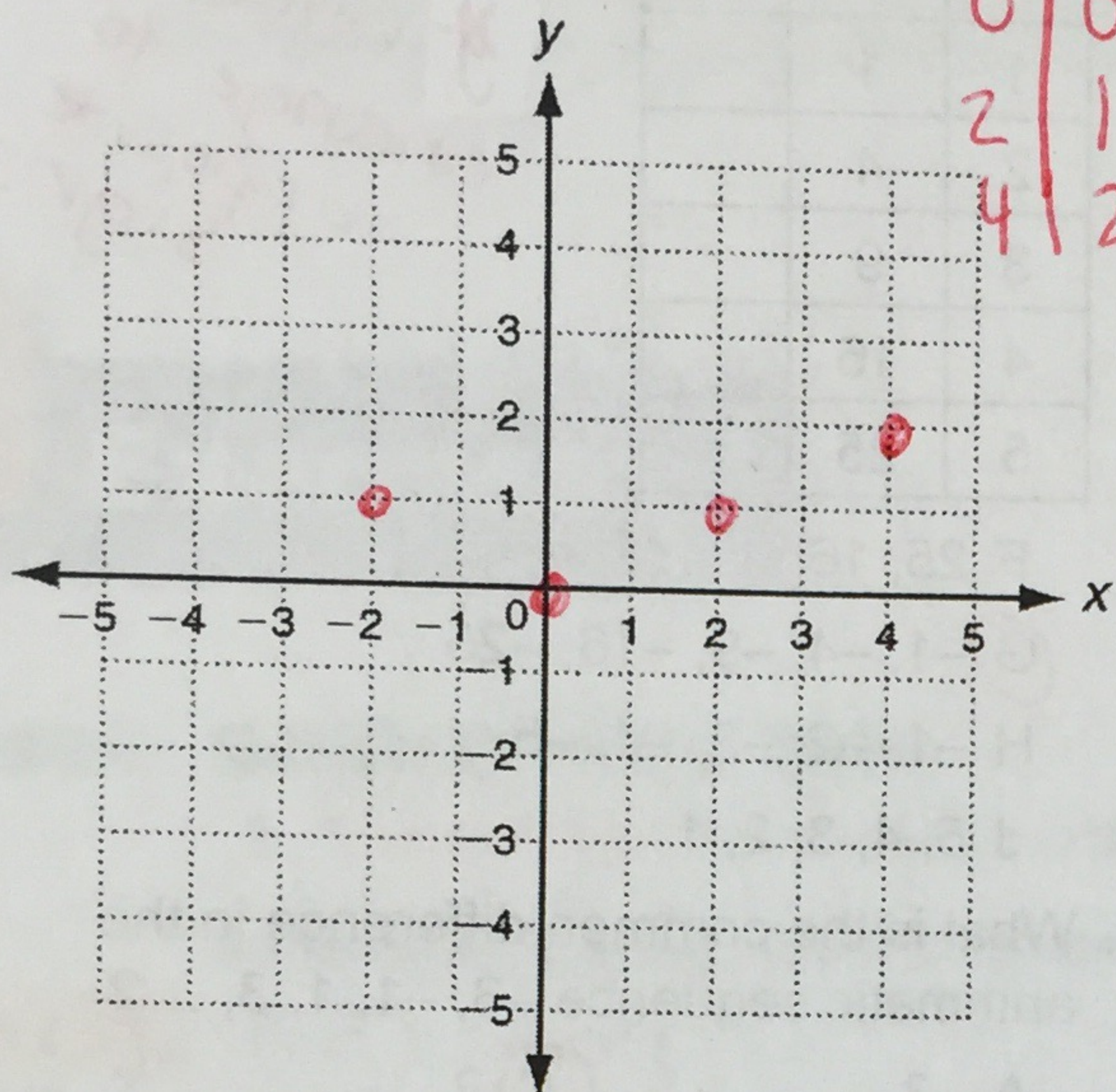
Graphs and Transformations

Review continued

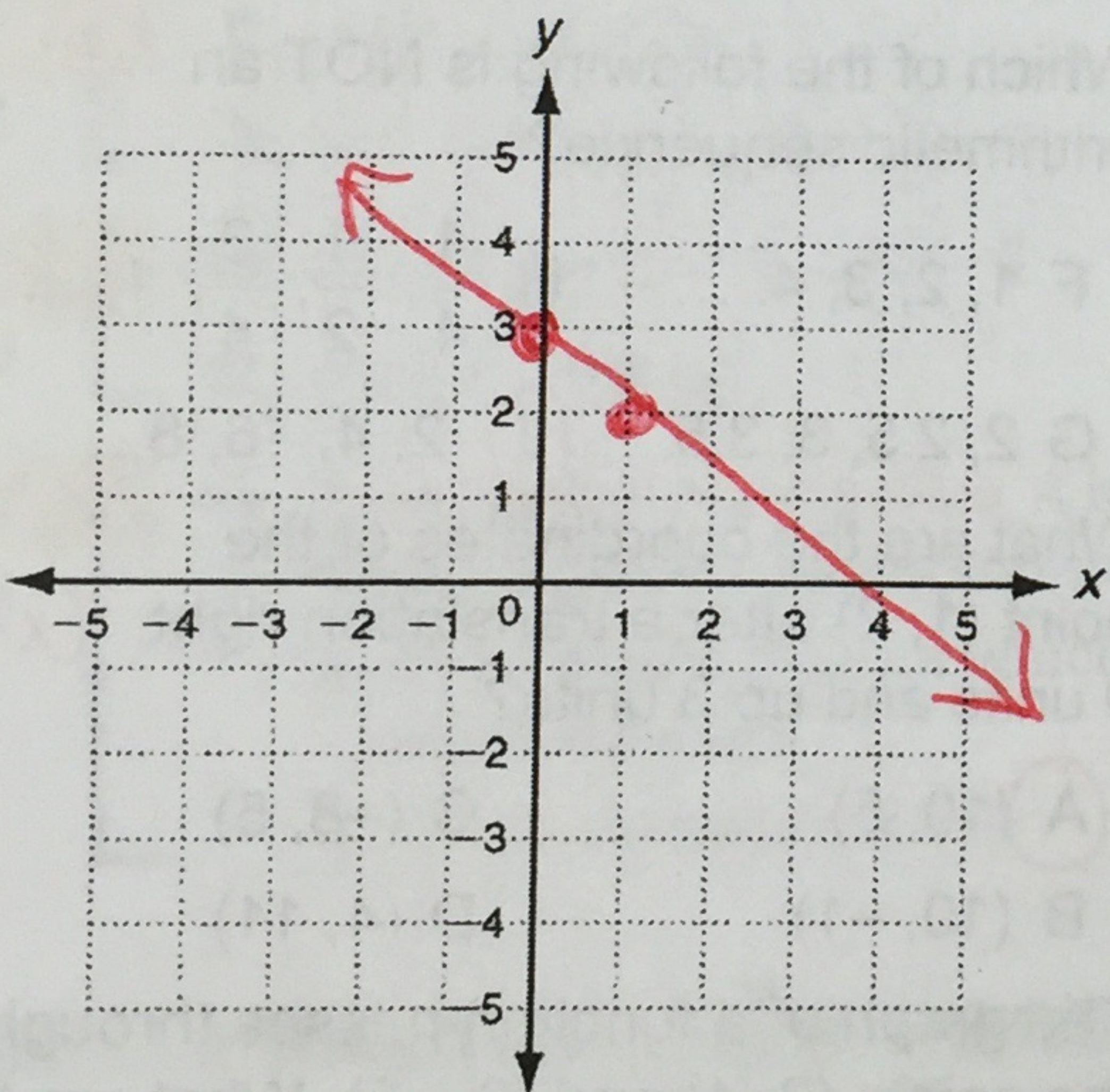
Graph each function.

9. $y = \frac{1}{2}|x|$; D: $\{-2, 0, 2, 4\}$

x	y
-2	1
0	0
2	1
4	2



10. $y = -x + 3$



11. What is the 45th term of the arithmetic sequence 58, 61, 64, 67, ...?

+3

$$a_n = 58 + (n-1)3$$

$$a_n = 58 + (45-1)3$$

$$a_n = 58 + 44(3)$$

$$a_n = 190$$

12. What numbers complete the table of the transformed function?

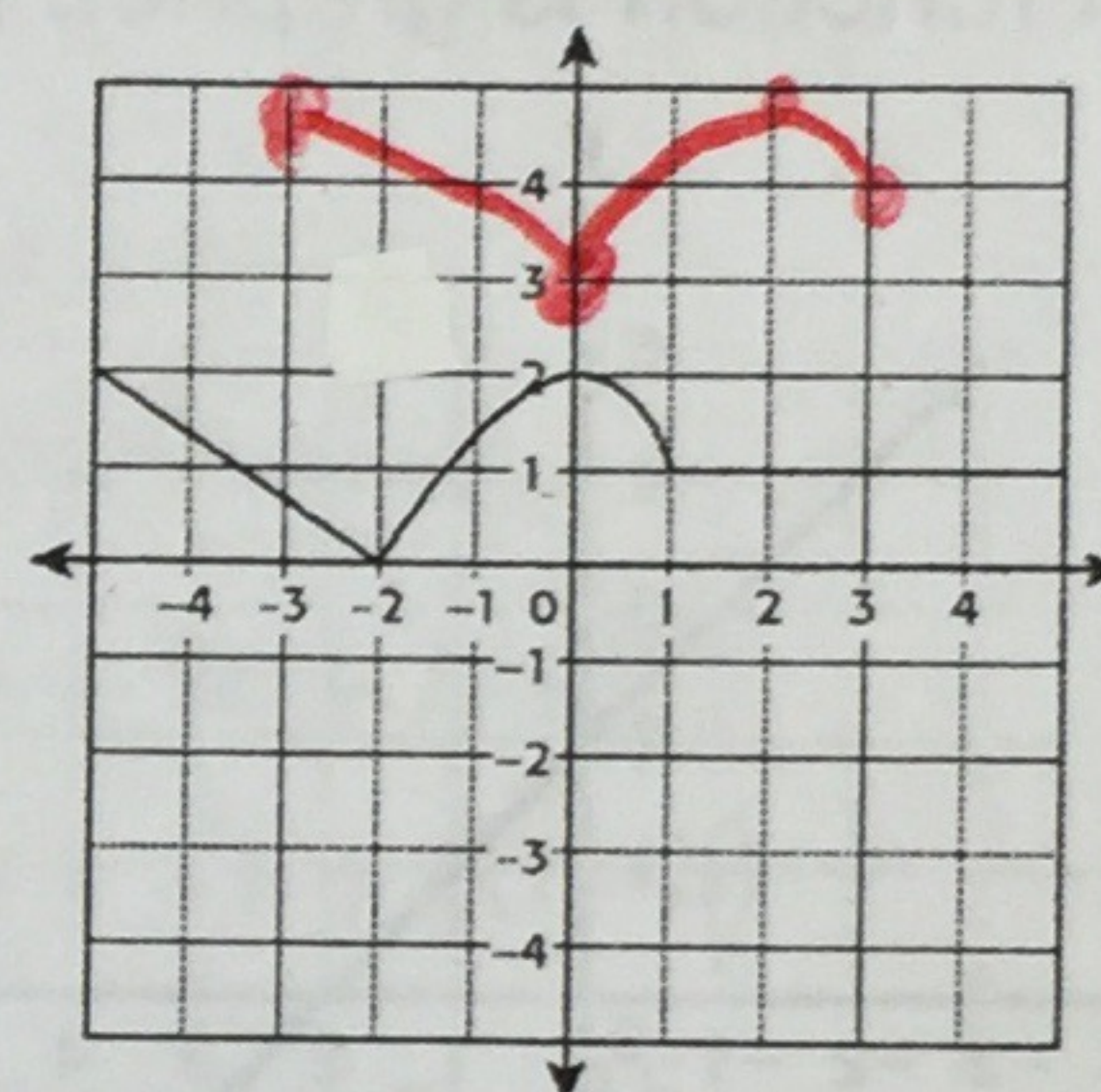
Reflection across y-axis

	x	y
	-2	1
	-4	2
	-6	3
	-8	4
	-10	5

x-values change to opposite

2, 4, 6, 8, 10

13. Use a table to perform a translation of $y = f(x)$ right 2 units and up 3 units. Graph using the same coordinate plane as the original function.



x	y	x+2	y+3
-5	2	(-3)	(5)
-2	0	(0)	(3)
0	2	(2)	(5)
1	1	(3)	(4)