Formulas

Slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope – Intercept form of a line: $y = mx + b$

(h, k) form of a line: $\boldsymbol{y = m(x - h) + k}$

Standard form of a line: $\boldsymbol{Ax + By = C}$

(h, k) form of an absolute value function: $\boldsymbol{y = m|x - h| + k}$

Explicit form of arithmetic sequence: $\boldsymbol{a_n = dn + a_0}$

For #1 – 8: Solve each equation for the variable. If needed, round to one decimal place.

1) $7x + 3 = -11$

2) $-5(2d - 8) = 24$

3) $4b - 25 - b + 16 = 45$

4) $-8b + 1 = b - 15$

5) $-3(11 - 5x) = 2(4x - 6)$

6) $14x - 27 + x = 8x + 7(x - 2)$

7) $11x - 5 + 2x = 13(x - 1) + 8$

8) $\frac{1}{4}y - 3 = 2y - 1$

9) Solve and graph the solution on the provided number line: $2x - 10 < 4x - 6$

For #10 – 13: $f(x) = -5x - 1$ and $g(x) = 3x - 7$.

10) Find $f(-5)$

11) Find $g(-4)$

12) Find x if $f(x) = 9$.

13) Find x if $g(x) = 14$.

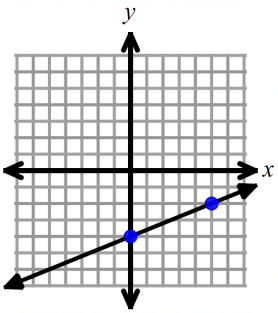
For #14 – 15: Find the slope of the line passing through the given points.

14) $(2, 7)$ and $(5, 13)$

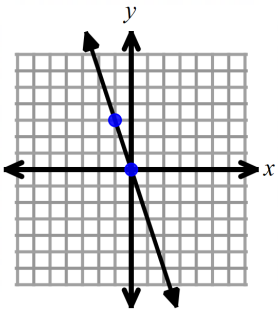
15) $(-9, 4)$ and $(3, -2)$

For #16 – 17: Find the slope of the line graphed.

16)



17)



For # 18 – 19: Identify the domain (D) and range (R) of the relation shown.

18) $\{(-5, 6), (11, 2), (3, -1), (-2, -1)\}$

19)

x	-2	0	3	6
y	11	2	-3	-1

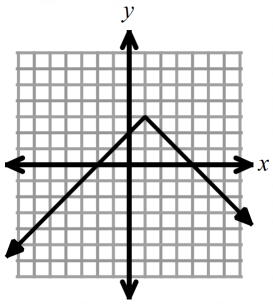
For #20 – 23: Is the relation a function? (Yes or no?)

20)

x	y
2	5
3	5
4	5
3	5

21) $\{(-2,4),(3,4),(-2,8)\}$

22)



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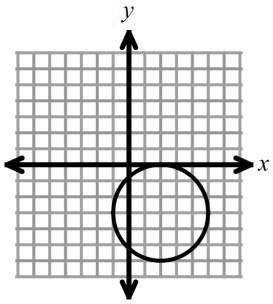


24) Solve for x. You do not need to graph the solution. $-3 < \frac{1}{4}x + 2 \leq 5$

For #25 – 26: Write a linear function to represent each set of data.

25)

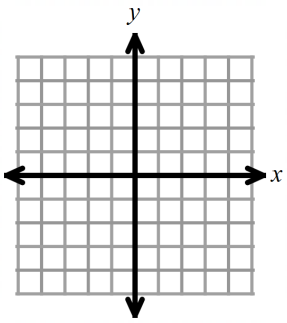
x	-1	0	1	2	3
$f(x)$	7	4	1	-2	-5

26)

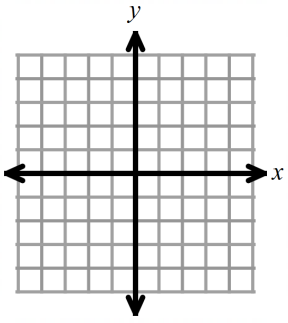
x	1	2	3	4	5
$f(x)$	6	11	16	21	26

For #27 – 31: Graph each line.

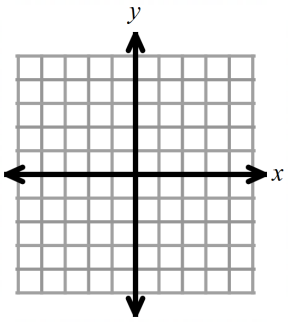
27) $y = -\frac{1}{4}x + 2$



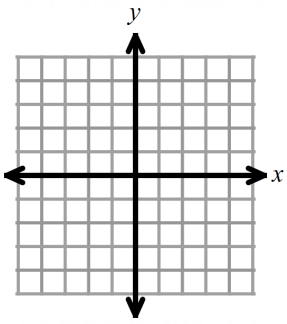
28) $y = 2x - 4$



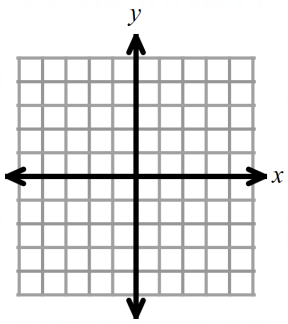
29) $y = -(x + 3) + 4$



30) $x = -1$



31) $y = 4$



33. Write the equation, in slope-intercept form, of the line that has a slope of 2 and *y*-intercept -6.

For #34 – 35: Write an equation, in (h, k) form, of the line described below.

34. passes through (-7, 5) and has slope -3

35. Passes through $(-1,4)$ and $(10,-18)$

Formulas

Slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope – Intercept form of a line: $y = mx + b$

(h, k) form of a line: $\boldsymbol{y = m(x - h) + k}$

Standard form of a line: $\boldsymbol{Ax + By = C}$

(h, k) form of an absolute value function: $\boldsymbol{y = m|x - h| + k}$

Explicit form of arithmetic sequence: $\boldsymbol{a_n = dn + a_0}$

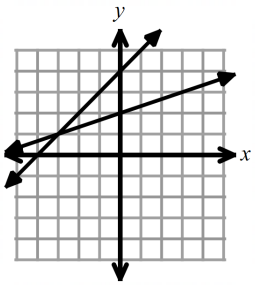
For #1 – 2: Convert each line to slope-intercept form.

1) $3x - 2y = 8$

2) $-7x - y = 11$

For #3 – 5: What is the solution for each system shown?

3)



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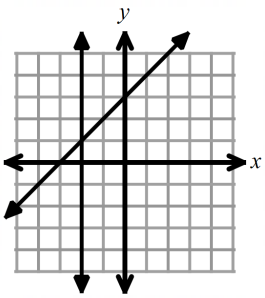

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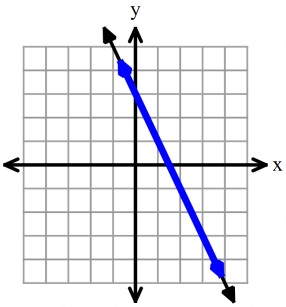


For #6 – 9: Decide if each statement below is true or false.

6) A linear system with one horizontal line and one vertical line will have one solution.

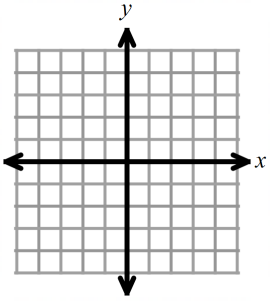
7) A linear system with two lines with the same slope and same *y*-intercept will have no solution.

8) A linear system with two lines with different slopes and different *y*-intercepts will have one solution.

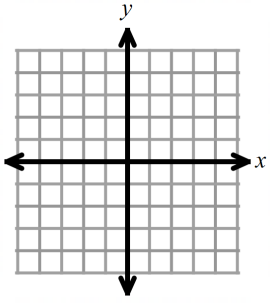
9) A linear system with two parallel lines will have no solution.

For #10 – 11: Solve each system for (x, y). Graphs are provided but are not required.

10) $\begin{cases} y = -3x + 2 \\ y = -x - 2 \end{cases}$



11) $\begin{cases} y = 4x - 1 \\ x = 1 \end{cases}$



For #12 – 17, solve each system for $(x, y.)$.

12) $\begin{cases} y = -x + 8 \\ y = -3x + 18 \end{cases}$

13) $\begin{cases} 3x + 2y = -2 \\ 7x - 2y = 42 \end{cases}$

14) $\begin{cases} -3x + 4y = 11 \\ 2x + 2y = 2 \end{cases}$

15) $\begin{cases} 2x - 4y = 18 \\ 5x - 3y = 24 \end{cases}$

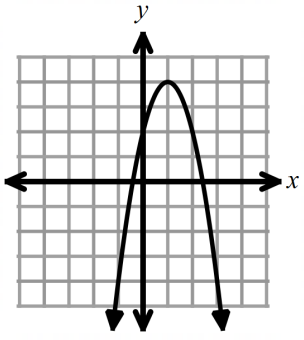
16) $\begin{cases} 2x + y = -1 \\ -2x - y = 1 \end{cases}$

17) $\begin{cases} -8x + 4y = -36 \\ 2x - y = 4 \end{cases}$

18) **Write a system to model this situation:.** A ski store rents skis and snowboards. Nanners rented 2 sets of skis and 3 snowboards, and she spent $180. Johnny rented 4 sets of skis and one snowboard, and he spent $160. Let x = number of sets of skis rented and y = number of snowboards rented.

For #19 – 21, write the domain and range of each graph.

19)



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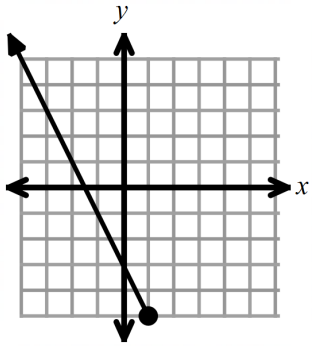
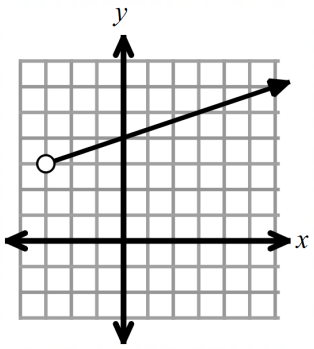
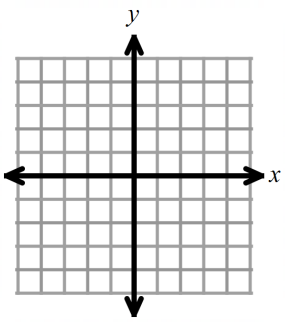


21)

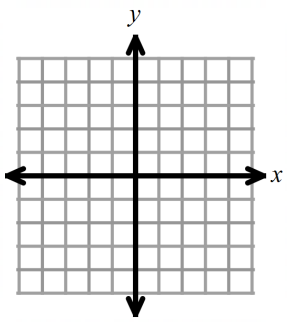


For #22 – 24: Graph each absolute value function.

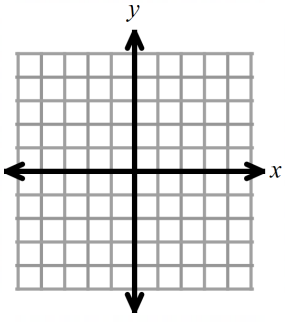
22) $y = -\frac{5}{3}|x - 1| + 4$



23) $y = 2|x + 3| - 1$



24) $y = \frac{1}{2}|x| + 3$



25) Consider the function $f(x) = -5|x + 7| - 3$. What are the transformations from the parent function $y = |x|$ to get the graph of $f(x)$?

For #26 – 29: Solve each equation for *x*.

26) $|x - 5| + 3 = 7$

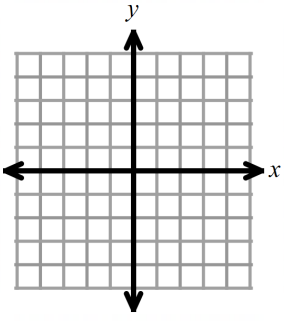
27) $2|x| + 6 = -8$

28) $-5|x - 4| = -10$

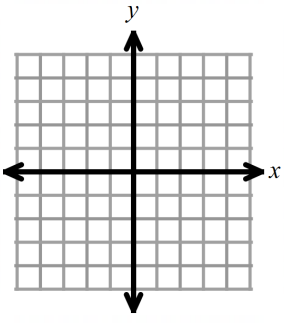
29) $-3|x + 1| + 4 = -20$

For #30 – 31: Graph each linear inequality.

30) $y > -\frac{1}{4}x - 3$



31) $y \leq 3x - 2$



For #32 – 33: Write the explicit formula for each arithmetic sequence.

32) $22, 29, 36, 43, 50, \ldots$

33) $4, -1, -6, -11, -16, \ldots$

Formulas

Slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope – Intercept form of a line: $y = mx + b$

(h, k) form of a line: $\boldsymbol{y = m(x - h) + k}$

Standard form of a line: $\boldsymbol{Ax + By = C}$

(h, k) form of an absolute value function: $\boldsymbol{y = m|x - h| + k}$

Explicit form of arithmetic sequence: $\boldsymbol{a_n = dn + a_0}$

Directions: Do all work on this packet. Write your final answer on the answer document.

1) Solve for x: $-5x + 8 = -4$

A. 2.4
B. 0.4
C. 6.2
D. -3.8

2) Solve for d: $2(2d - 3) = -19$

A. -3.25
B. 4.5
C. -6.25
D. -5.5

3) Solve for a: $a - 18 + 4a + 12 = 34$

A. -5
B. 8
C. 10
D. -9

4) Solve for b: $3b - 18 = -7b + 12$

A. 1.5
B. 10
C. 3
D. -4.5

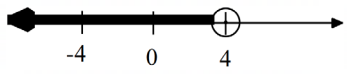
5) Solve for x: $-(3x+4) = -2(5-x)$

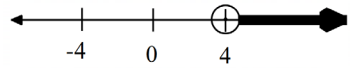
A. 1.2
B. -6
C. -4.4
D. 14

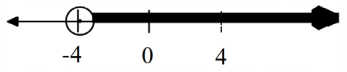
6) Solve for x: $4x - 27 = x + 3(x-9)$

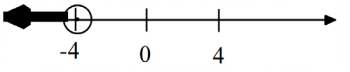
A. -33
B. -39
C. no solution
D. all real numbers

7) What is the graph of the solution of this inequality? $-x - 8 < 3x + 8$

A) 

B) 

C) 

D) 

For #8 – 9: $f(x) = -4x + 7$ and $g(x) = -3x - 5$.

8) Find $f(-5)$

A. -13
B. 27
C. 3
D. -23

9) Find x if $g(x) = 13$.

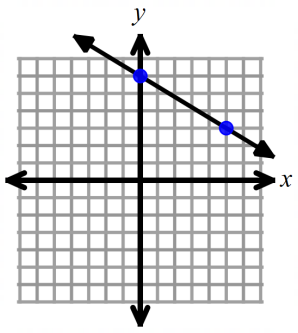
A. $2.\overline{6}$
B. 7
C. -6
D. -43

10) Find the slope of the line passing through $(3, -7)$ and $(-2, 11)$.

A. $-\frac{18}{5}$
B. $\frac{5}{18}$
C. 4
D. $-\frac{1}{4}$

11) Find the slope of the line shown in the graph to the right.

A. $-\frac{5}{3}$
B. $\frac{5}{3}$
C. 6
D. $-\frac{3}{5}$



For # 12 – 13: Identify the domain (D) and range (R) of the relation shown.

12) $\{(-4,2),(1,2),(4,-1),(-5,7)\}$

A) $D:\{-5,-4,1,4\}$; $R:\{-1,2,7\}$
B) $D:\{-1,2,7\}$; $R:\{-1,2,7\}$
C) $D:\{-1,2,7\}$; $R:\{-5,-4,1,4\}$;
D) $D:\{-5,-4,1,4\}$; $R:\{-5,-4,1,4\}$

13)

x	-4	-1	0	2
y	7	-5	3	8

A) $D:\{-5,3,7,8\}$; $R:\{-4,-1,0,2\}$
B) $D:\{-4,-1,0,2\}$; $R:\{-4,-1,0,2\}$
C) $D:\{-4,-1,0,2\}$; $R:\{-5,3,7,8\}$
D) $D:\{-5,3,7,8\}$; $R:\{-5,3,7,8\}$

14) Which relation below is a function? **Select all that apply.**

A)

x	y
2	1
2	5
4	8
6	7

B) $\{(-2,4),(3,4),(3,8)\}$

C)

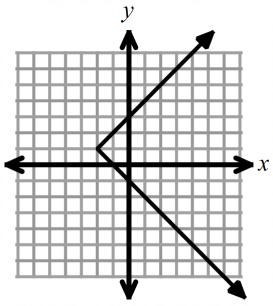
x	y
1	-7
3	5
4	9
3	5

D)

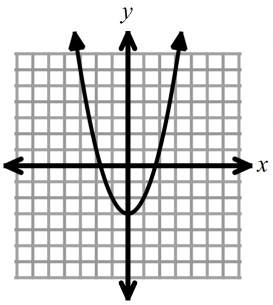
x	2	4	6	7
y	3	-1	3	6

15) Which relation below is **not** a function?

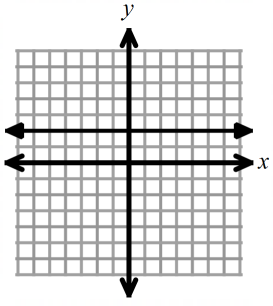
A)



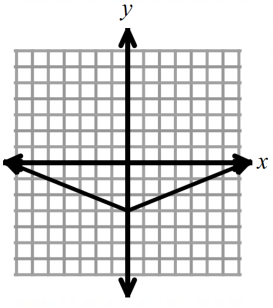
B)



C)



D)



16) What is the solution for the compound inequality $4 < \frac{1}{3}x - 7 \leq 6$

A. $-3.3 < x \leq 4.3$
B. $33 < x \leq 39$
C. $-9 < x \leq -3$
D. $-11 < x \leq 18$

For #17 – 18: Write a linear function to represent each set of data.

17)

x	-1	0	1	2	3
$f(x)$	3	10	17	24	31

A. $y = 10x + 7$
B. $y = 7x + 10$
C. $y = 10x + 3$
D. $y = 7x + 3$

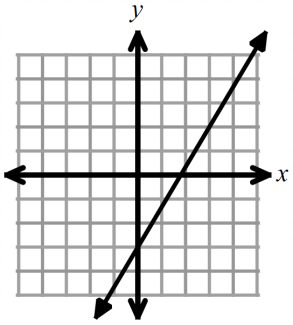
18)

x	1	2	3	4	5
$f(x)$	-1	-3	-5	-7	-9

A. $y = -2x - 1$
B. $y = x - 2$
C. $y = -2x + 1$
D. $y = -x + 2$

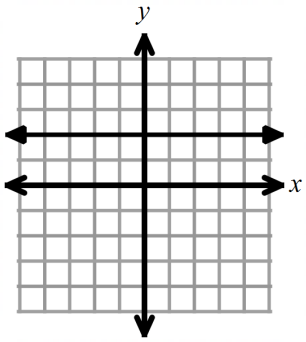
For #19 – 20: What is the equation of the line graphed?

19)



A. $y = \frac{3}{5}x + 2$
B. $y = -\frac{5}{3}x - 3$
C. $y = -\frac{3}{5}x + 2$
D. $y = \frac{5}{3}x - 3$

20)

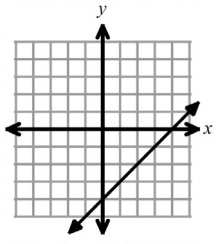


A. $y = 2x$
B. $y = x + 2$
C. $x = 2$
D. $y = 2$

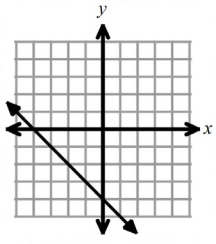
For #21 – 22, which line is the graph of the given equation?

21) $y = x - 4$

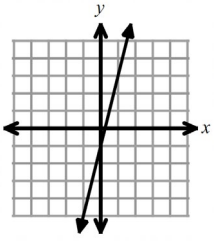
A)



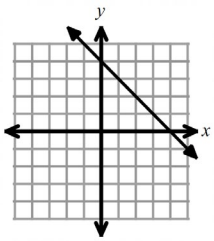
B)



C)

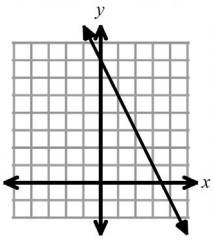


D)

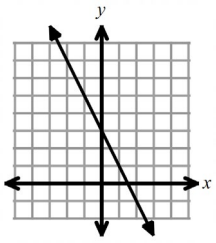


22) $y = -2(x - 1) + 5$

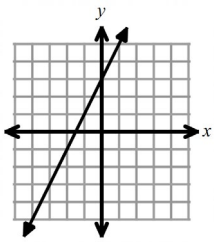
A)



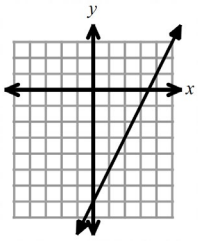
B)



C)



D)



23. Write the equation, in slope-intercept form, of the line that has a slope of -1 and y-intercept 3.

A. $y = 3x - 1$

B. $y = -x + 3$

C. $y = 1x - 3$

D. $y = -3x + 1$

For #24 – 25: Write an equation, in (h, k) form, of the line described below.

24. passes through (-7, 5) and has slope -3

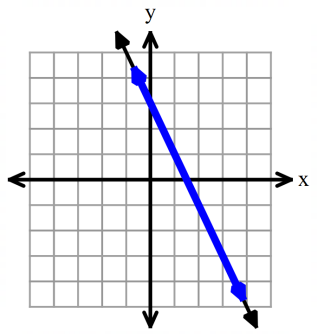
A. $y = -3(x + 7) + 5$
B. $y = -3(x - 7) + 5$
C. $y = -3(x + 7) - 5$
D. $y = -3(x - 7) - 5$

25. Passes through $(-1,4)$ and $(10, -18)$

A. $y = -\frac{1}{2}(x - 10) + 18$
B. $y = -\frac{1}{2}(x + 1) - 4$
C. $y = -2(x - 10) - 18$
D. $y = -2(x - 1) + 4$

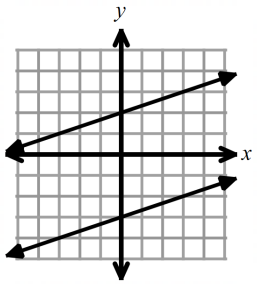
For #26 – 27: What is the solution for each system shown?

26)



A. $(-4, 2)$
B. $(1, 3)$
C. No Solution
D. Infinitely Many Solutions

27)



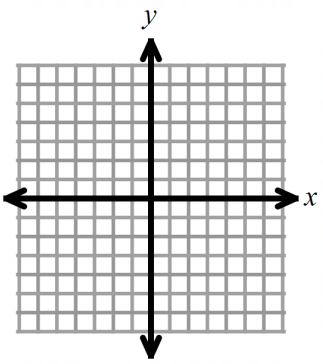
A. $(-3, 1)$
B. $(-1, 3)$
C. No Solution
D. Infinitely Many Solutions

28) Which statement below is always true?

A. A linear system with two lines with the same slopes and different y-intercepts has one solution.
B. A linear system with two parallel lines has no solution.
C. A linear system with one vertical line and one horizontal line has no solution.
D. A linear system with two vertical lines has one solution.

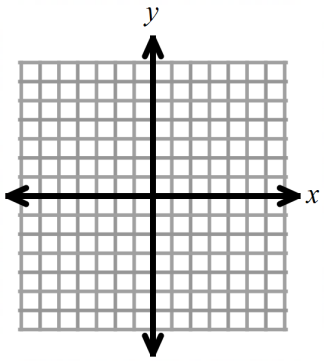
For #29 – 30: Solve each system for (x, y). Graphs are provided but are not required.

29) $\begin{cases} y = 2x + 3 \\ y = -x + 6 \end{cases}$



A. $(3, 7)$
B. $(1, 5)$
C. $(-3, 1)$
D. $(7, 15)$

30) $\begin{cases} y = 2x - 1 \\ x = 4 \end{cases}$



A. $(2.5, 4)$
B. $(4, 3)$
C. $(4, 7)$
D. $(-1.5, 4)$

31) What is the value of ***x*** for the system shown? $\begin{cases} x = 2y - 14 \\ x = -6y + 10 \end{cases}$

A. $x = 3$
B. $x = -16$
C. $x = -1$
D. $x = -8$

32) What is the value of ***y*** for the system shown? $\begin{cases} 3x + 2y = -2 \\ -3x + y = 38 \end{cases}$

A. $y = 18$
B. $y = 20$
C. $y = 12$
D. $y = -8.7$

33) Solve the system: $\begin{cases} -3x + 4y = 11 \\ 2x + 2y = 2 \end{cases}$

A. $(-1, 2)$
B. $(2, -1)$
C. $(7, -6)$
D. No solution

34) Which system below has *infinitely many solutions?*

A) $\begin{cases} x - 2y = 8 \\ -x + 2y = -7 \end{cases}$

B) $\begin{cases} x + 3y = -4 \\ -x - 3y = 4 \end{cases}$

C) $\begin{cases} -5x + 7y = -9 \\ 5x + 7y = 0 \end{cases}$

D) $\begin{cases} -4x - 11y = 20 \\ 4x - 11y = 2 \end{cases}$

35) Which system below models this situation? A store is having a sale on shirts and jackets. Steve bought 7 shirts and 3 jackets, and he spent \$320. Ryan bought 5 shirts and 2 jackets, and he spent \$220. Let $x =$ number of shirts purchased and $y =$ number of jackets purchased.

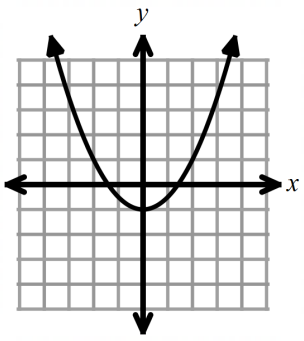
A) $\begin{cases} 7x - 3y = 320 \\ 5x - 2y = 220 \end{cases}$

B) $\begin{cases} 7x + 3y = 320 \\ 5x + 2y = 220 \end{cases}$

C) $\begin{cases} 7x + 3y = 220 \\ 5x + 2y = 320 \end{cases}$

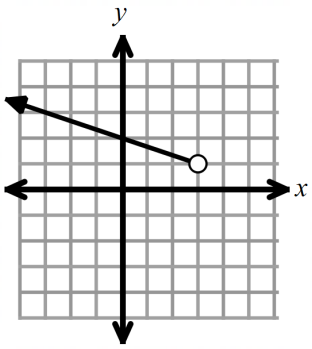
D) $\begin{cases} y = 7x + 3 \\ y = 5x + 2 \end{cases}$

36) What is the domain and range of the graph shown to the right?



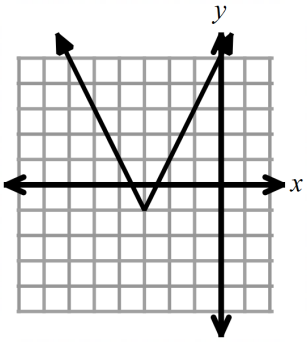
A. D: all real numbers; R: $y \geq -1$
B. D: all real numbers; R: $y \geq 0$
C. D: all real numbers; R: $y \leq -1$
D. D: all real numbers; R: all real numbers

37) What is the domain and range of the graph shown to the right?



A. D: all real numbers; R: all real numbers
B. D: $\{x > 3\}$; R: $\{y < 1\}$
C. D: $\{x > 1\}$; R: $\{y < 3\}$
D. D: $\{x < 3\}$; R: $\{y > 1\}$

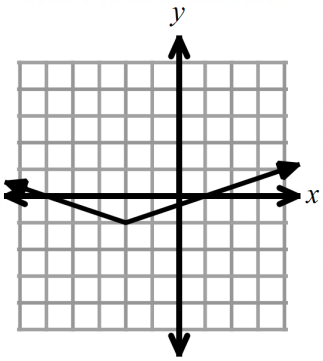
38) What is equation of the absolute value function graphed below?



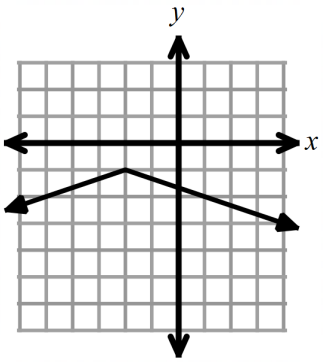
A. $y = -2|x + 3| + 1$
B. $y = -2|x - 3| + 1$
C. $y = 2|x + 3| - 1$
D. $y = 2|x - 3| - 1$

39) What is the graph of $y = -\frac{1}{3}|x + 2| - 1$?

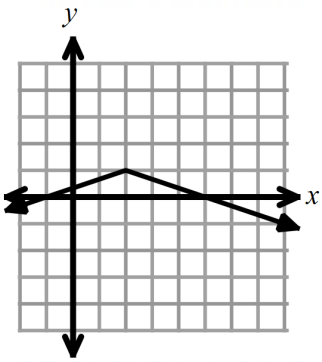
A)



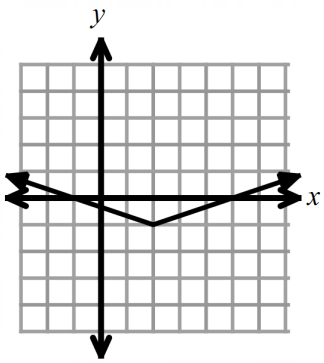
B)



C)



D)



40) Consider the function $f(x) = -|x - 1| + 4$. What are the transformations from the parent function $y = |x|$ to get the graph of $f(x)$?

A) vertical reflection, stretch, shift up 1, shift left 4
B) stretch, shift left 1, shift down 4
C) vertical reflection, shift right 1, shift up 4
D) vertical reflection, stretch, shift left 1, shift down 4

41) Solve the equation for x: $-2|x| + 6 = -8$

A) $x = \pm 1$
B) $x = 7$
C) $x = 1$
D) $x = \pm 7$

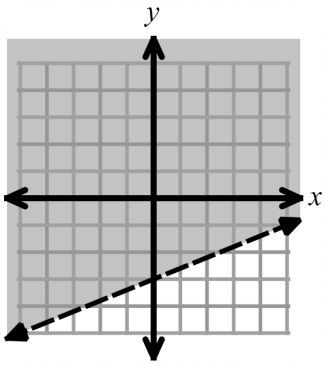
42) Solve the equation for x: $4|x - 5| + 3 = 15$

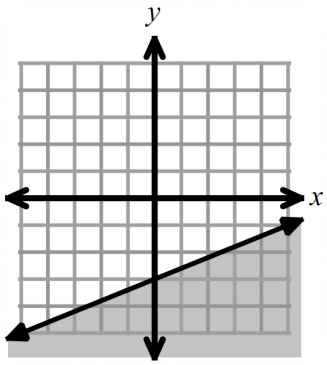
A) $x = 8, x = 2$
B) $x = \pm 8$
C) $x = \pm 3$
D) no solution

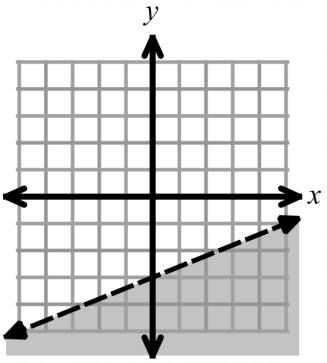
43) Solve the equation for x: $5|x+1| = -20$

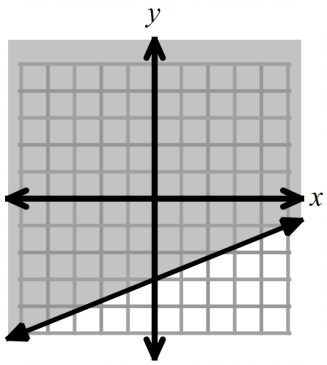
A) $x = \pm 4$
B) $x = -3; x = 5$
C) $x = \pm 15$
D) no solution

44) Which coordinate system below shows the graph of $y \geq \frac{2}{5}x - 3$?

A)


B)


C)


D)


45) What is the explicit formula for the arithmetic sequence $17, 14, 11, 8, 5, \ldots$?

A) $a_n = 3n + 17$
B) $a_n = -3n + 20$
C) $a_n = -3n + 17$
D) $a_n = 3n + 20$

46) Convert to slope-intercept form: $-2x - y = 7$

A. $y = 2x + 7$
B. $y = -2x + 7$
C. $y = -2x - 7$
D. $y = 2x - 7$