

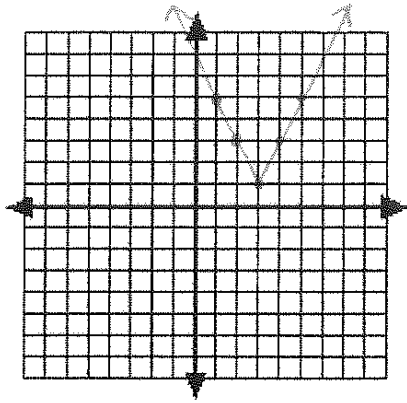
Algebra 2
2.5 - 2.6 Review

Name: Key

Graph each absolute value function. Then determine the domain and range.

1. $f(x) = |2x - 6| + 1$

x	y
1	5
2	3
3	1
4	3
5	5



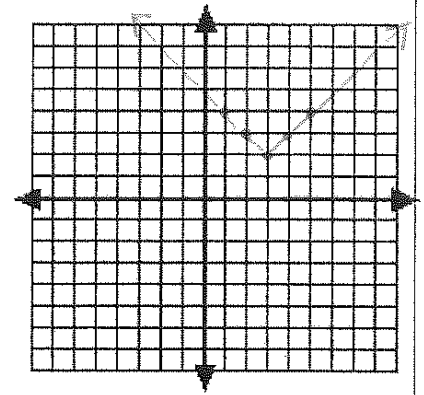
Vertex: (3, 1)

Domain: $\{x | x = \mathbb{R}\}$

Range: $\{y | y \geq 1\}$

2. $f(x) = |x - 3| + 2$

x	y
1	4
2	3
3	2
4	3
5	4



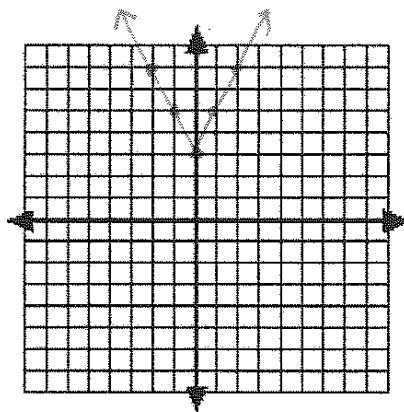
Vertex: (3, 2)

Domain: $\{x | x = \mathbb{R}\}$

Range: $\{y | y \geq 2\}$

3. $f(x) = |2x| + 3$

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



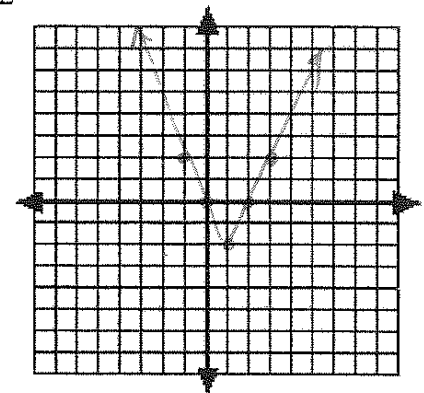
Vertex: (0, 3)

Domain: $\{x | x = \mathbb{R}\}$

Range: $\{y | y \geq 3\}$

4. $f(x) = 2|x - 1| - 2$

x	y
-1	2
0	0
1	-2
2	0
3	2



Vertex: (1, -2)

Domain: $\{x | x = \mathbb{R}\}$

Range: $\{y | y \geq -2\}$

Graph each piece-wise function. Determine the domain and range. Then evaluate the function at the specified values.

5.

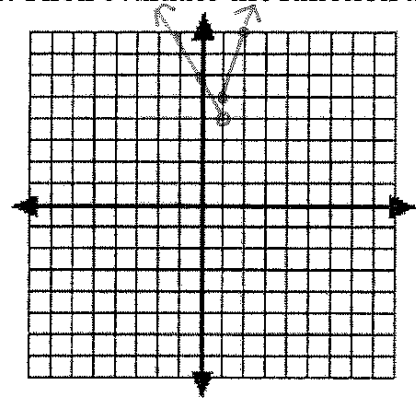
$$f(x) = \begin{cases} 3x+2 & \text{if } x \geq 1 \\ -2x+6 & \text{if } x < 1 \end{cases}$$

$$\begin{array}{r|l} 3x+2 & \\ \hline x & y \\ 1 & 5 \\ 2 & 8 \\ 3 & 11 \end{array}$$

$$\begin{array}{r|l} -2x+6 & \\ \hline x & y \\ 1 & 4 \\ 0 & 6 \\ -1 & 8 \end{array}$$

Domain: $\{x | x \in \mathbb{R}\}$

Range: $\{y | y > 4\}$



Evaluate:

$f(-5)$ $f(-5) = -2(-5) + 6$ $f(-5) = 16$	$f(-1)$ $f(-1) = -2(-1) + 6$ $f(-1) = 8$	$f(3)$ $f(3) = 3(3) + 2$ $f(3) = 11$
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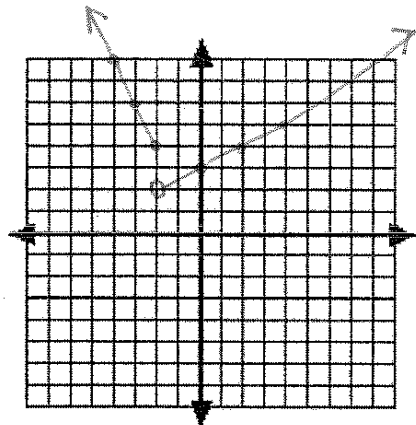
6. $f(x) = \begin{cases} -2x & \text{if } x \leq -2 \\ \frac{1}{2}x + 3 & \text{if } x > -2 \end{cases}$

$$\begin{array}{r|l} -2x & \\ \hline x & y \\ -2 & 4 \\ -3 & 6 \\ -4 & 8 \end{array}$$

$$\begin{array}{r|l} \frac{1}{2}x + 3 & \\ \hline x & y \\ -2 & 2 \\ 0 & 3 \\ 2 & 4 \end{array}$$

Domain: $\{x | x \in \mathbb{R}\}$

Range: $\{y | y > 2\}$

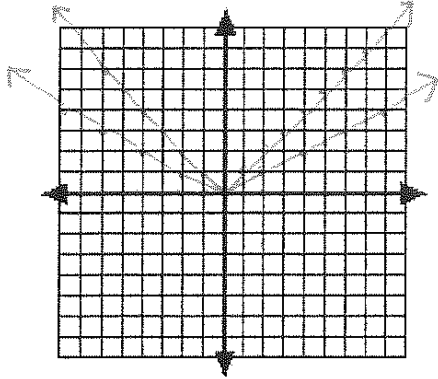


Evaluate:

$f(-5)$ $f(-5) = -2(-5)$ $f(-5) = 10$	$f(-1)$ $f(-1) = \frac{1}{2}(-1) + 3$ $f(-1) = \frac{5}{2}$	$f(3)$ $f(3) = \frac{1}{2}(3) + 3$ $f(3) = \frac{9}{2}$
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7. Determine the type of parent function (constant, identity, absolute value or quadratic). Then graph the parent function and the given function. Describe the transformation.

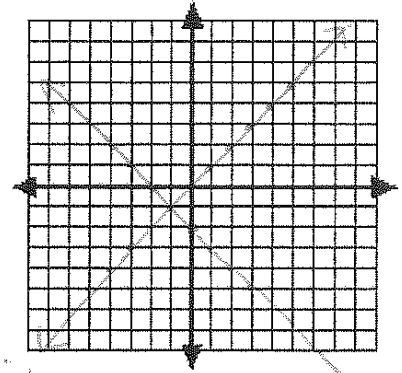
a. $y = \frac{1}{2}|x|$



Type of Function: abs value

Description of Transformation: Shrink 1/2

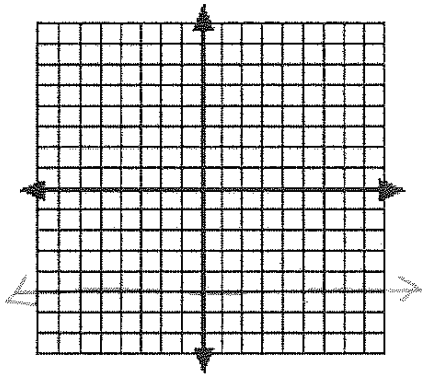
b. $y = -x - 2$



Type of Function: identity

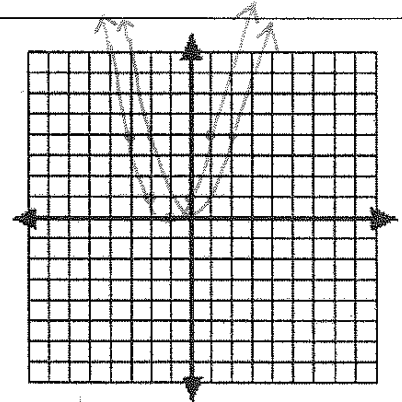
Description of Transformation: reflection + shift down 2

c. $y = -5$



Type of Function: constant

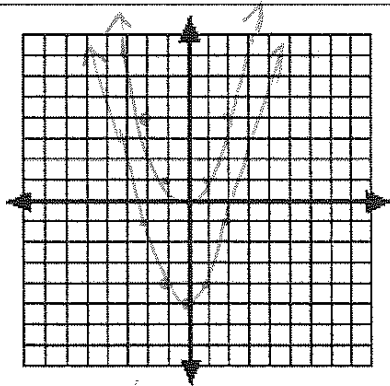
d. $y = (x + 1)^2$



Type of Function: quadratic

Description of Transformation: shift left 1

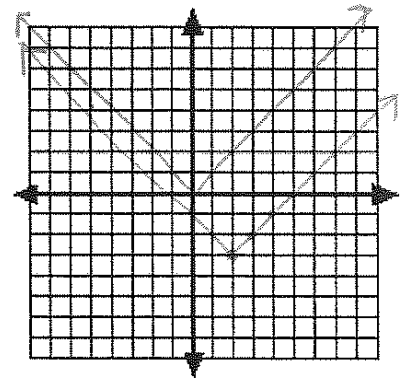
e. $y = x^2 - 5$



Type of Function: quadratic

Description of Transformation: shift down 5

f. $y = |x - 2| + 3$

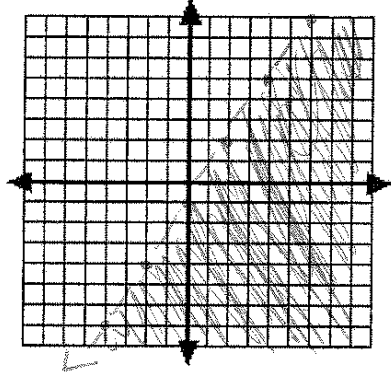


Type of Function: abs value

Description of Transformation: shift right 2, up 3

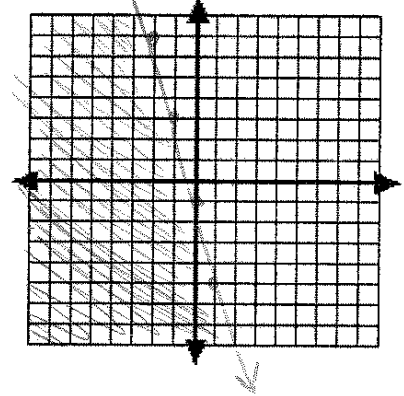
8. Graph the following inequalities.

a. $y < \frac{3}{2}x - 1$

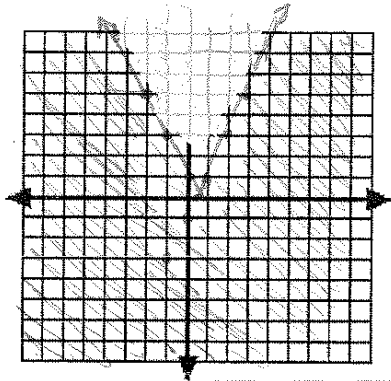


b. $4x + y \leq -1$

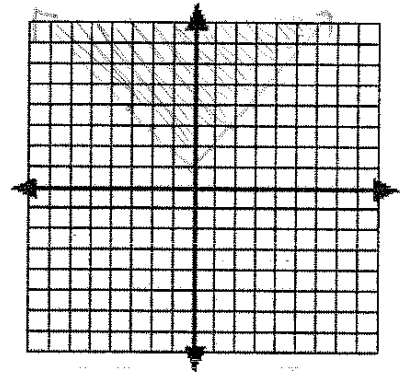
$y \leq -4x - 1$



c. $y \leq |2x - 1|$



d. $y \geq |x| + 1$



9. You offer to mow your neighbors' lawns for \$20 or to wash their cars for \$10. Your goal is to earn at least \$1500 this summer.

Write and graph an inequality that represents the possible number of lawns you would have to mow x and cars you would have to wash y in order to reach your goal.

$20L + 10C \geq 1500$

75 lawns 0 cars

0 lawns 150 cars

