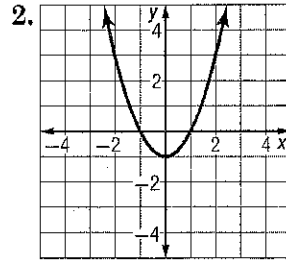
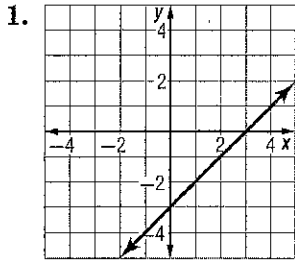


2-7 Skills Practice

Parent Functions and Transformation

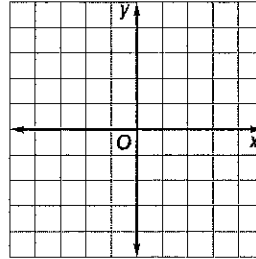
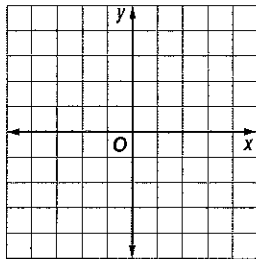
Identify the type of function represented by each graph.



Describe the translation in each equation. Then graph the function.

3. $y = |x| - 2$

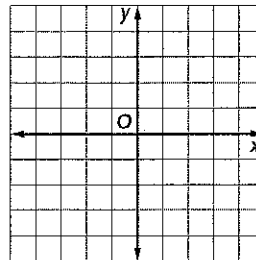
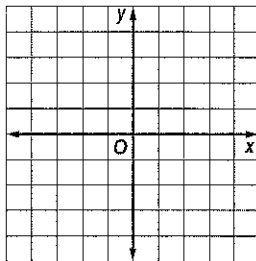
4. $y = (x + 1)^2$



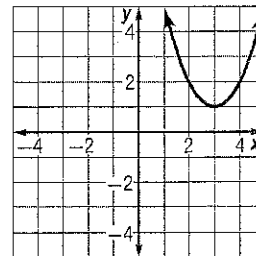
Describe the reflection in each equation. Then graph the function.

5. $y = -x$

6. $y = -|x|$



7. **Biology** A biologist plotted the data from his latest experiment and found that the graph of his data looked like this graph. What type of function relates the variables in the experiment?

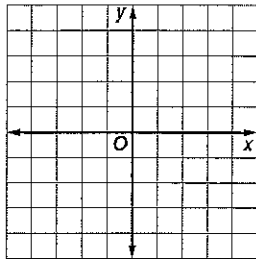


2-7 Practice

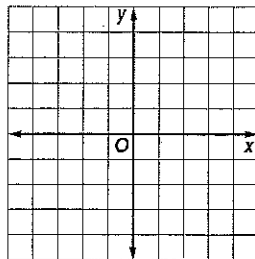
Parent Functions and Transformations

Describe the translation in each function. Then graph the function.

1. $y = x + 3$

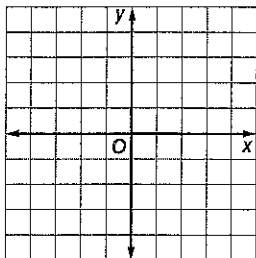


2. $y = x^2 - 3$

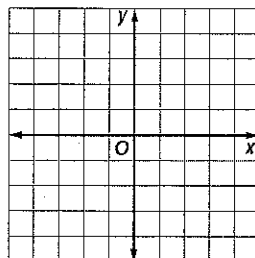


Describe the reflection in each function. Then graph the function.

3. $y = (-x)^2$

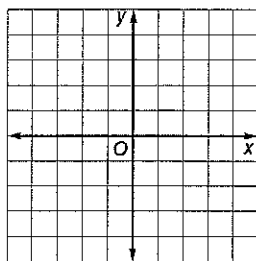


4. $y = -(3)$

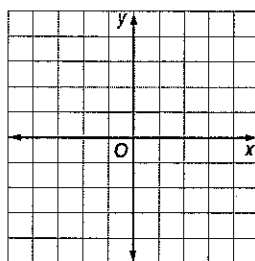


Describe the dilation in each function. Then graph the function.

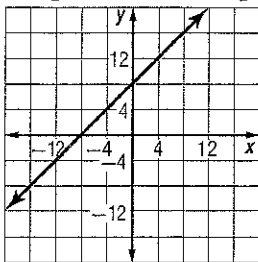
5. $y = |2x|$



6. $4y = x^2$



7. **CHEMISTRY** A scientist tested how fast a chemical reaction occurred at different temperatures. The data made this graph. What type of function shows the relation of temperature and speed of the chemical reaction?

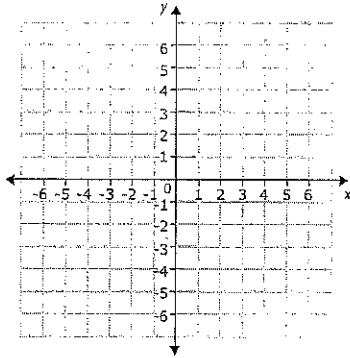


Name: _____ Date: _____ Hour: _____

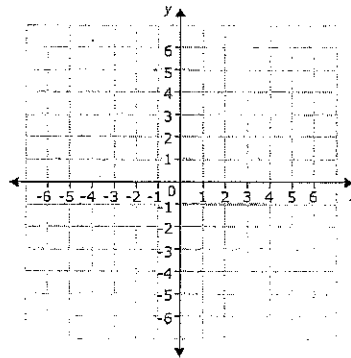
Reflections and Dilations Worksheet

Describe the reflection in each function. Then, graph the function.

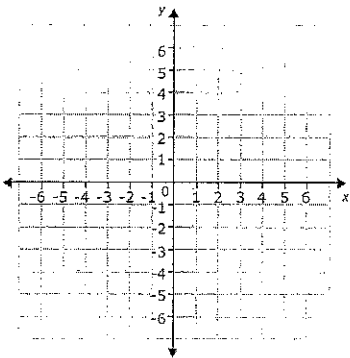
1) $y = -x$



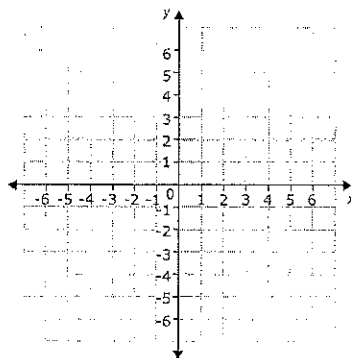
2) $y = -x^2$



3) $y = -|x|$

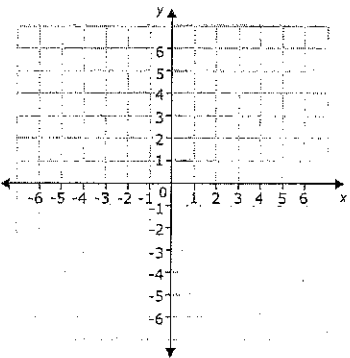


4) $y = |-x|$

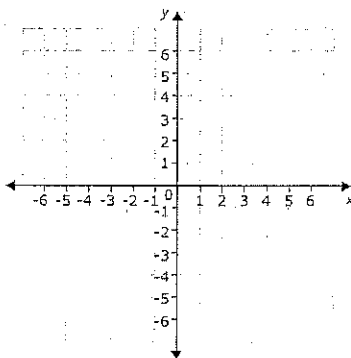


Describe the dilation in each function. Then, graph the function.

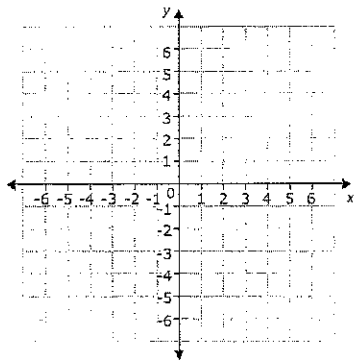
5) $y = (3x)^2$



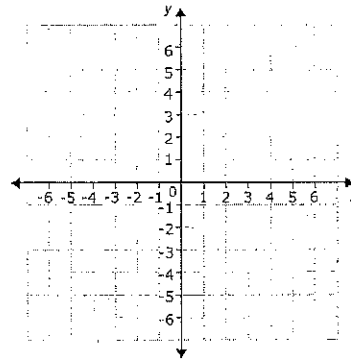
6) $y = 4|x|$



7) $y = |2x|$

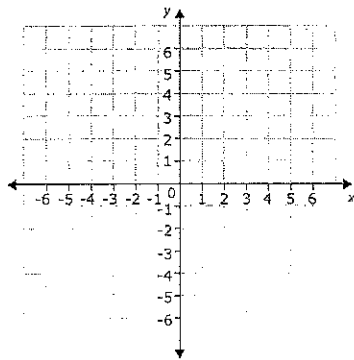


8) $y = \frac{2}{3}x$

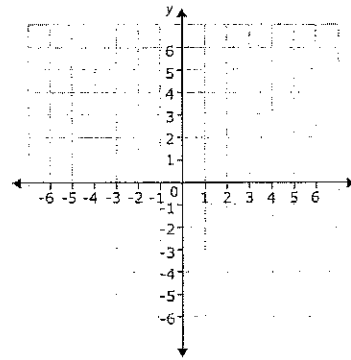


Graph the function, and describe the transformation for each.

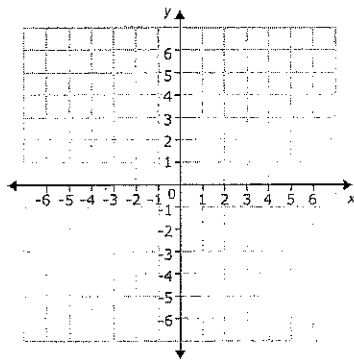
9) $y = -|x|$



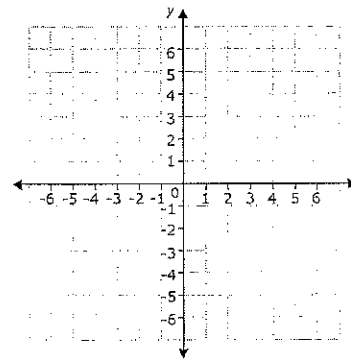
10) $y = 3x^2$



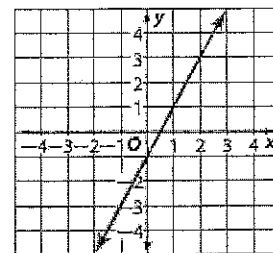
11) $y = (-x)^2$



12) $y = \frac{3}{5}x$



13) Kimi thinks that the graph and table at the right are representations of the same linear relation. Carla disagrees. Who is correct? Explain your reasoning using complete sentences.



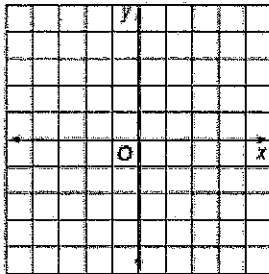
x	y
0	-1
1	1
2	3
3	5

Name: _____ Date: _____ Hour: _____

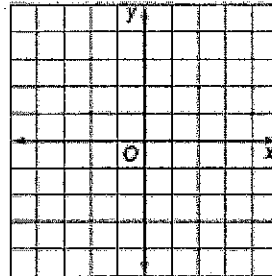
Translations Practice

Graph the following functions, and give the parent functions.

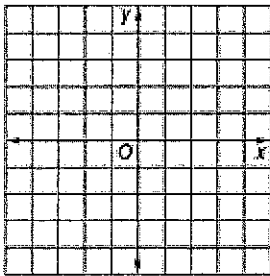
1) $y = |x| - 2$



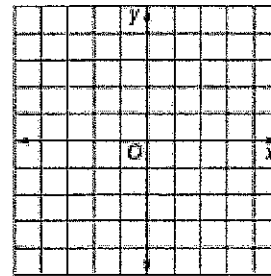
2) $y = (x + 1)^2$



3) $y = x + 3$

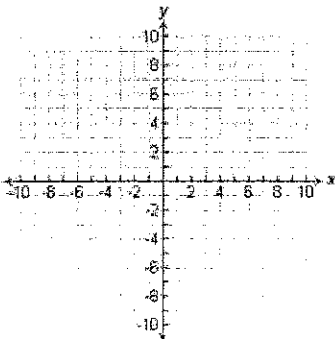


4) $y = x^2 - 3$

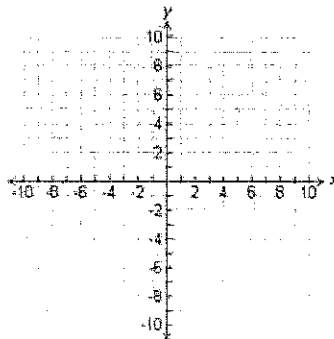


Identify the parent function, and describe the translation in each function. Then, graph the function.

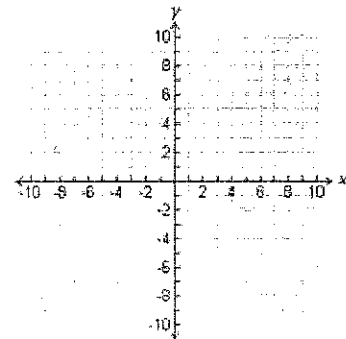
5. $y = x^2 - 4$



6. $y = |x + 1|$

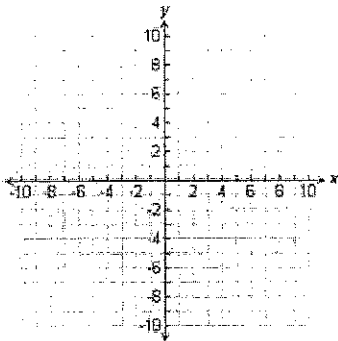


7. $y = |x| - 3$

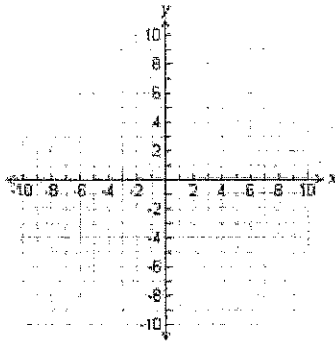


Identify the parent function, and describe the translation in each function. Then, graph the function.

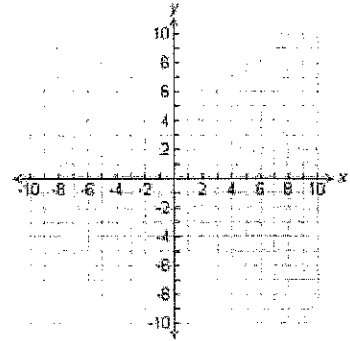
8. $y = (x - 5)^2$



9. $y = x - 1$

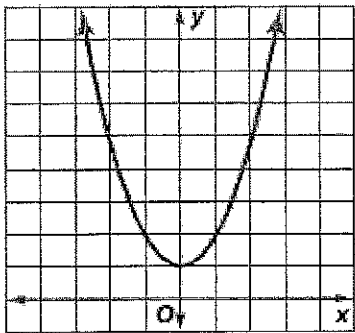


10. $y = x + 2$

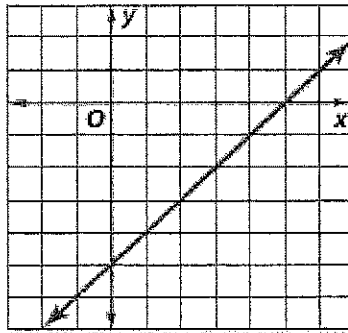


Write an equation for each graph given.

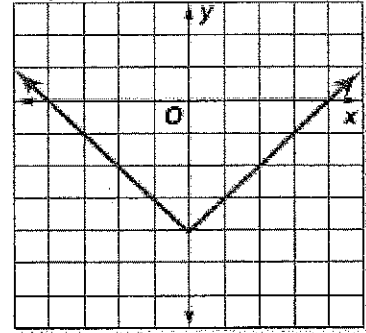
11)



12)



13)



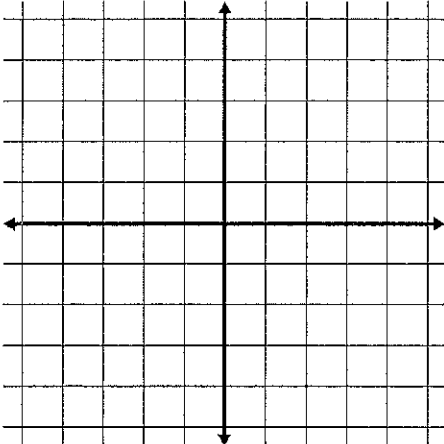
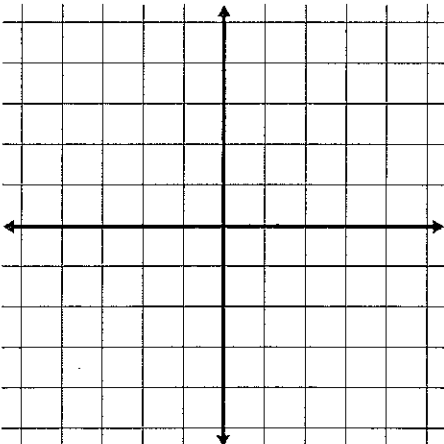
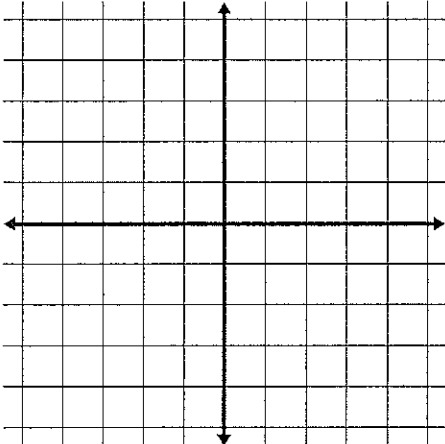
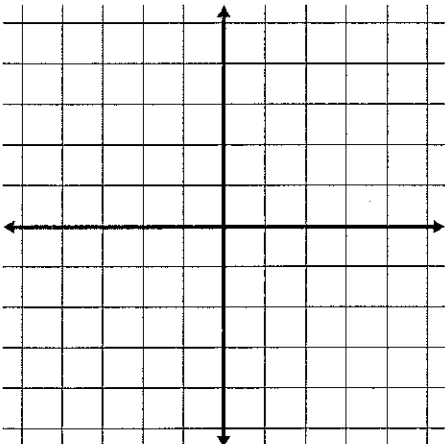
Name: _____ Date: _____ Hour: _____

Guided Notes: Transformations

There are 3 main transformations you will be studying in Algebra 1. In Geometry, you will learn more...but for now, we will focus on translations, reflections, and dilations.

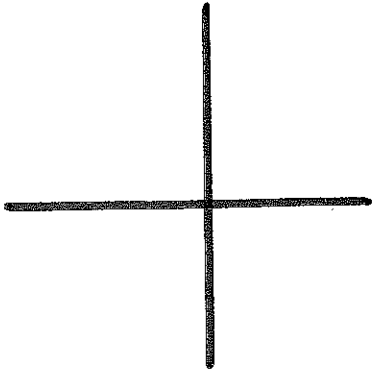
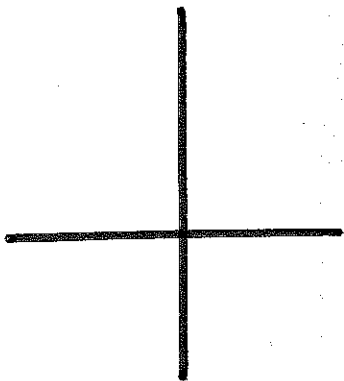
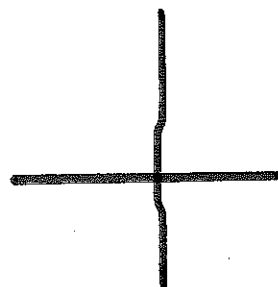
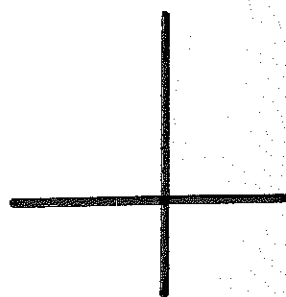
Translation: _____

For these examples, we are using the parent graph $f(x) = |x|$

Translation (moves the graph up, down, left, right)	
<p>Is there addition?</p> <p>Is it applied to the entire equation?</p> <ul style="list-style-type: none"> - $f(x) = x + c$ - Example: $f(x) = x + 3$, shift up 3 units  <p>Is it applied to only x?</p> <ul style="list-style-type: none"> - $f(x) = x + c$ - Example: $f(x) = x + 3$, shift to the left 3 units 	<p>Is there subtraction?</p> <p>Is it applied to the entire equation?</p> <ul style="list-style-type: none"> - $f(x) = x - c$ - Example: $f(x) - 3$, shift down 3 units  <p>Is it applied to only x?</p> <ul style="list-style-type: none"> - $f(x) = x - c$ - Example: $f(x) = x - 3$, shift 3 units right 

Reflection: _____

Dilation: _____

Reflections/Dilations (change the slope, reflect the graph over x or y axis)	
Is there a coefficient?	For these examples, we are using the parent graph $f(x) = x $
- Negative?	
	
- Positive?	
STRETCH	SHRINK
	

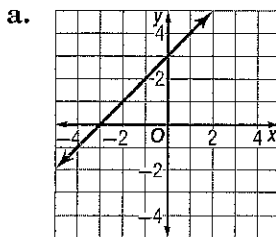
2-7 Study Guide and Intervention

Parent Functions and Transformations

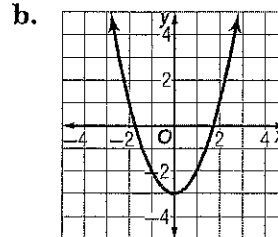
Parent Graphs The **parent graph**, which is the graph of the **parent function**, is the simplest of the graphs in a family. Each graph in a **family of graphs** has similar characteristics.

Name	Characteristics	Parent Function
Constant Function	Straight horizontal line	$y = a$, where a is a real number
Linear Function	Straight diagonal line	Identify Function $y = x$
Absolute Value Function	Diagonal lines shaped like a V	$y = x $
Quadratic Function	Curved like a parabola	$y = x^2$

Example Identify the type of function represented by each graph.



The graph is a diagonal line. The graph represents a linear function.

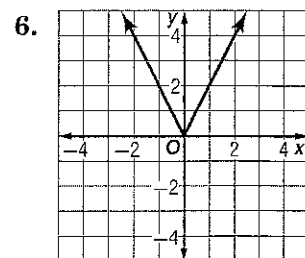
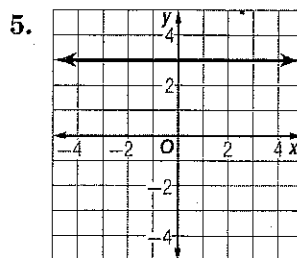
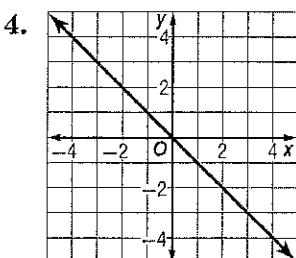
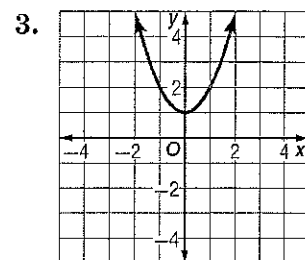
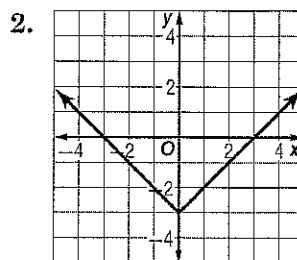
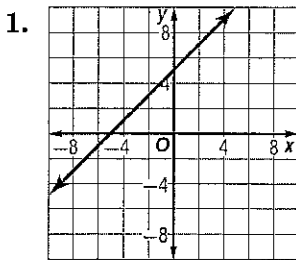


The graph is a parabolic curve. The graph represents a quadratic function.

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Exercises

Identify the type of function represented by each graph.



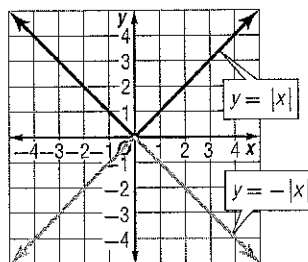
2-7 Study Guide and Intervention (continued)

Parent Functions and Transformations

Transformations Transformations of a parent graph may appear in a different location, may flip over an axis, or may appear to have been stretched or compressed.

Example Describe the reflection in $y = -|x|$. Then graph the function.

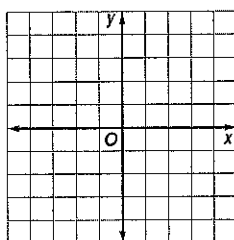
The graph of $y = -|x|$ is a reflection of the graph of $y = |x|$ in the x -axis.



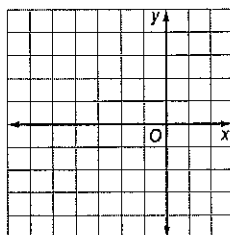
Exercises

Describe the translation in each function. Then graph the function.

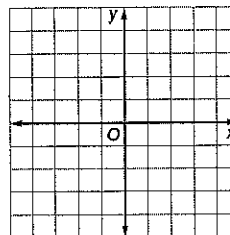
1. $y = x - 4$



2. $y = |x + 5|$

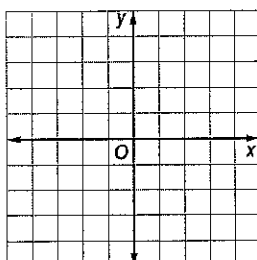


3. $y = x^2 - 3$

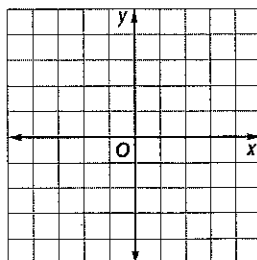


Describe the dilation in each function. Then graph the function.

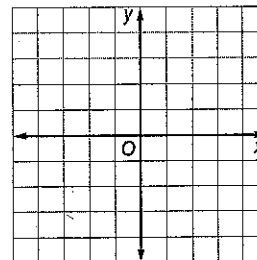
4. $y = 5x$



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



6. $y = 2x^2$

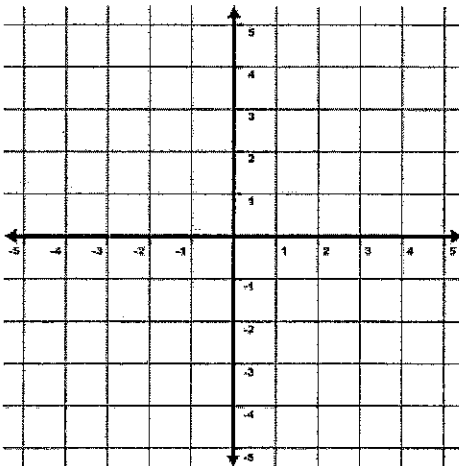
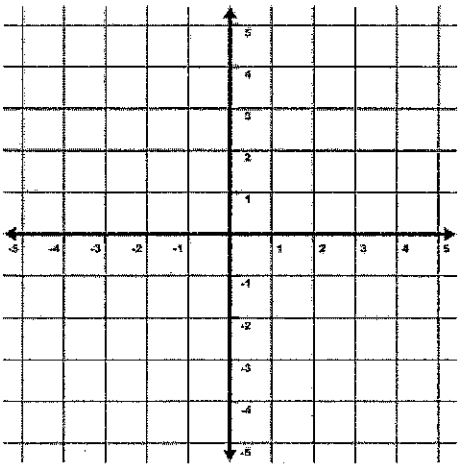
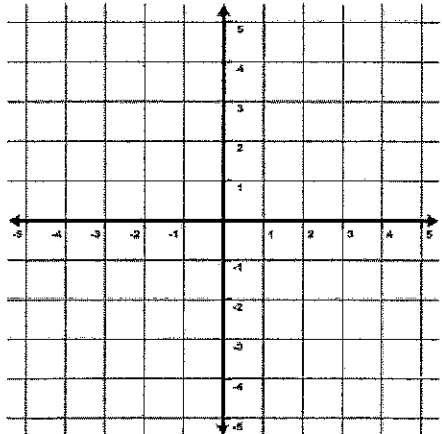
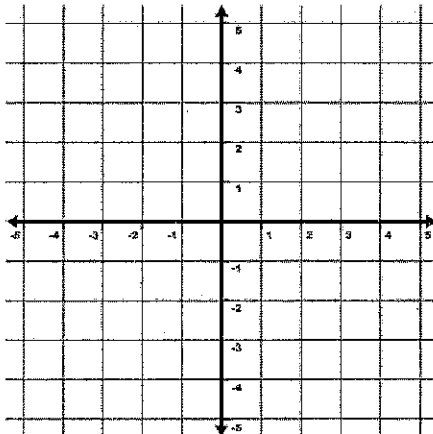


Guided Notes: Families of Graphs

Family of graphs: _____

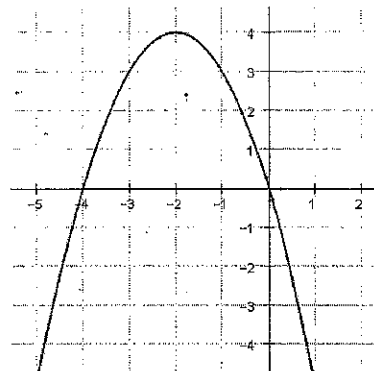
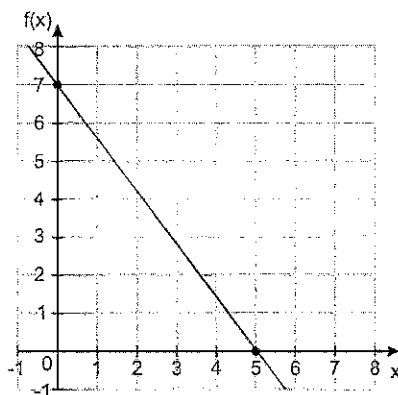
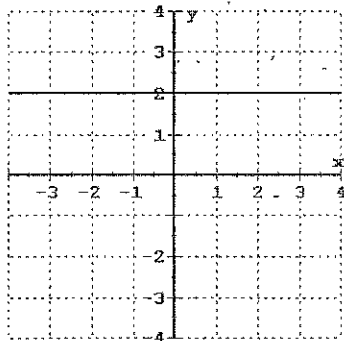
Parent function: _____

There are **four** main types of parent functions that we will be studying in Algebra 1. You'll learn more later on in Algebra 2 and beyond.

Parent Functions	
<p style="text-align: center;">Constant Function</p> <div style="text-align: center;">  </div> <p style="text-align: center;">General Equation: $f(x) = a$, where a is a number</p>	<p style="text-align: center;">Identity/Linear Function</p> <div style="text-align: center;">  </div> <p style="text-align: center;">General Equation: $f(x) = x$</p>
<p style="text-align: center;">Absolute Value Function</p> <div style="text-align: center;">  </div> <p style="text-align: center;">General Equation: $f(x) = x$</p>	<p style="text-align: center;">Quadratic Function</p> <div style="text-align: center;">  </div> <p style="text-align: center;">General Equation: $f(x) = x^2$</p>

Parent Functions and Transformations

Identify the type of function represented by each graph.



Transformation: _____

Three different types of transformations:

1)

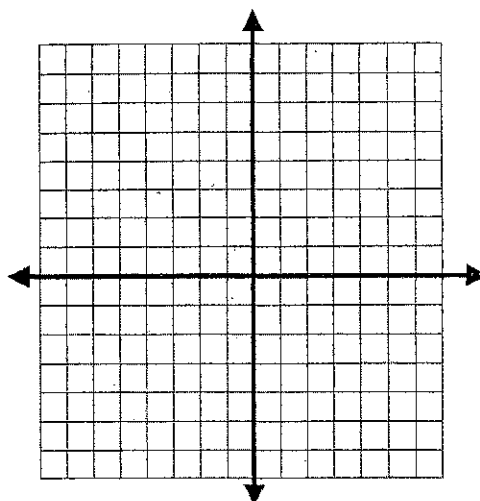
2)

3)

We'll be focusing on these three for the rest of the week, and for part of next week! These transformations won't be going away - you'll see them in Geometry next year (but instead of transforming graphs, you'll be transforming shapes!)

Graph each function without a calculator.

1. $f(x) = \begin{cases} 2x + 3, & x < 0 \\ 3 - x, & x \geq 0 \end{cases}$



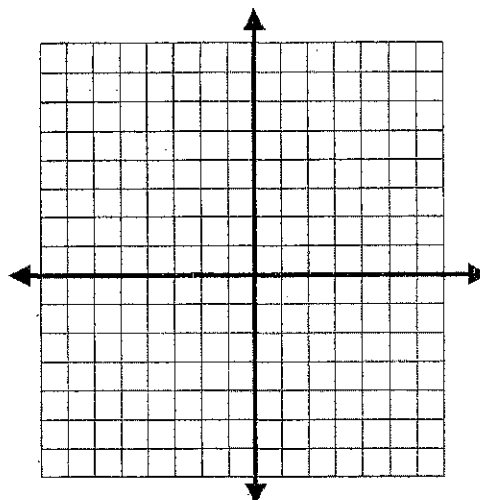
Evaluate the following:

$f(0) =$

$f(-3) =$

$f(2) =$

2. $f(x) = \begin{cases} x + 3, & x \leq 0 \\ 3, & 0 < x \leq 2 \\ 2x - 1, & x > 2 \end{cases}$

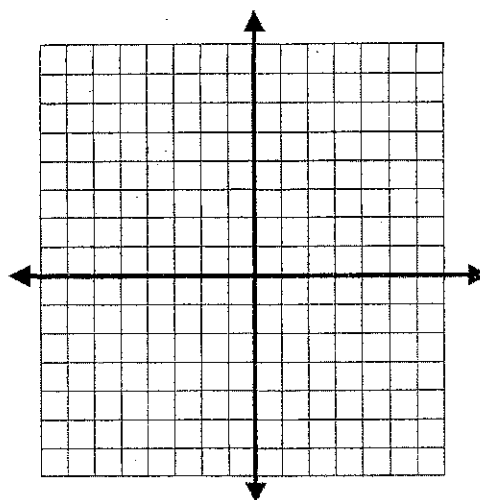


Evaluate the following:

$f(-1) =$

$f(1) =$

3. $f(x) = \begin{cases} 3x + 5, & x \leq -2 \\ x - 4, & x > -2 \end{cases}$



Evaluate the following:

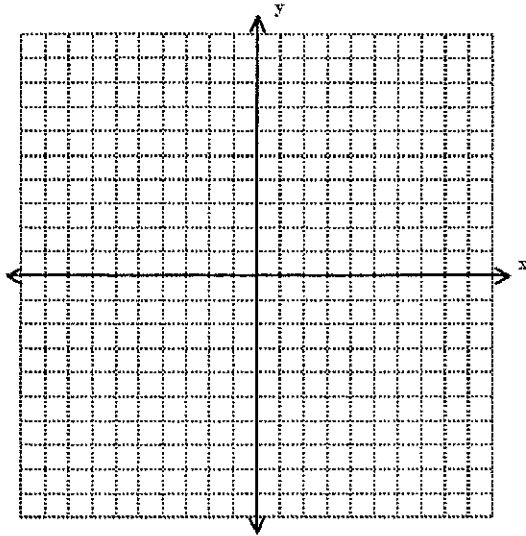
$f(2) =$

$f(-3) =$

$f(0) =$

4. Graph the piecewise function and evaluate it at the given values of x .

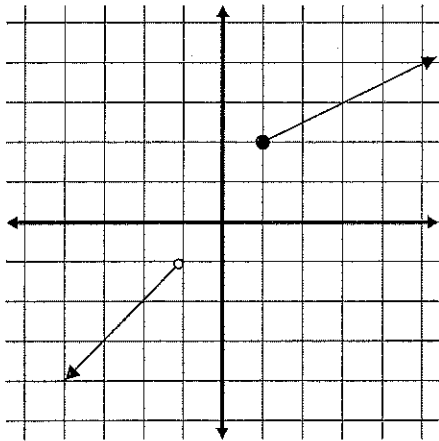
$$f(x) = \begin{cases} 2x - 1, & x \leq -2 \\ 4, & -2 < x \leq 3 \\ -x + 2, & x > 3 \end{cases}$$



Evaluate. $f(-4) =$

$f(3) =$

5.



Write the piecewise function for the graph.