

**Parent Function Review**

#1-4 Identify the parent function name and describe the transformation for each function.

1.  $g(x) = 3(x - 1)^2 - 6$

Parent Function: Quadratic,  $y = x^2$

Transformation: narrower by a scale factor of 3  
translated 1 unit right + 6 units down from (0,0)

2.  $f(x) = 5(x - 2)^3 - 11$

Parent Function: Cubic,  $y = x^3$

Transformation: narrower by a scale factor of 5,  
translated 2 units right + 11 units down from (0,0)

3.  $h(x) = \frac{2}{3}|x + 6|$

Parent Function: absolute value,  $y = |x|$

Transformation: wider by a scale factor of  $\frac{2}{3}$   
Translated 6 units left from (0,0)

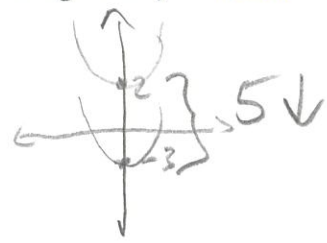
4.  $f(x) = x + 6$   
b: 6

Parent Function: linear,  $y = x$

Transformation: Translated 6 units up from (0,0)

5. What is the effect on the graph of the function  $y = x^2 + 2$  when it is changed to  $y = x^2 - 3$ ?

Translated 5 units down  
from (0,2)



#6-11 Name the Parent Function. Describe the transformation. Graph the equation. List the Domain and the Range of the function.

6)  $y = (x + 2)^2 - 3$   
V: (-2, -3)  
opp

\* arrows bc  
no constraints  
given

Parent Function: Quadratic,  $y = x^2$

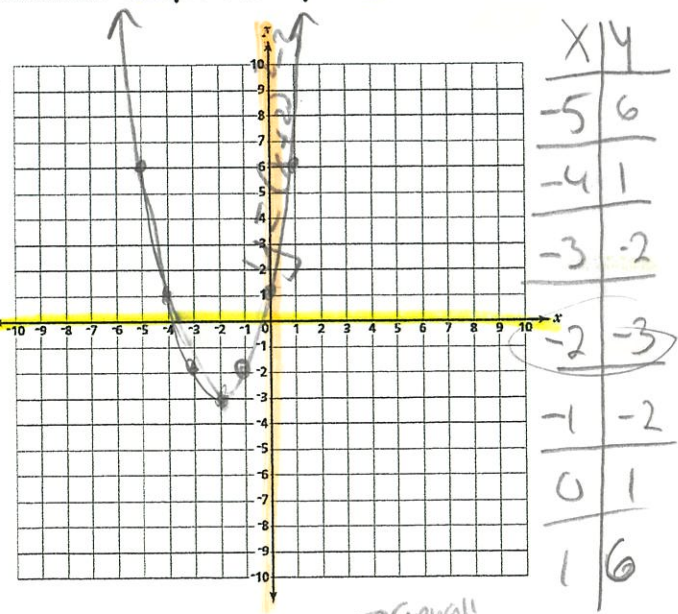
Transformation: Translated 2 units left and  
3 units down from (0,0)

Domain: all reals or  $\{x | x \in \mathbb{R}\}$  or  $(-\infty, \infty)$

Range:  $\{y | y \geq -3\}$  or  $[-3, \infty)$

set builder

interval notation



\* Copy all coordinates you can graph

7)  $y = -4x + 5$

$m: -\frac{4}{1}$   
 $B: 5$

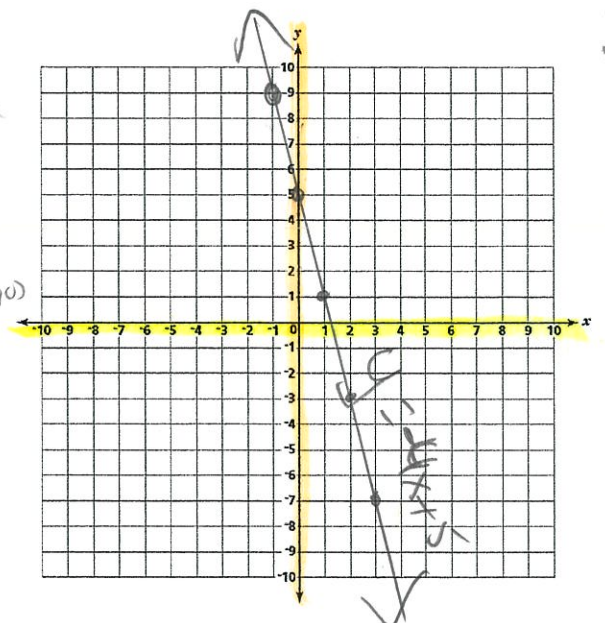
Parent Function: linear,  $y = x$

changes direction of slope

Transformation: reflected in the x-axis, steeper by a scale factor of 4 translated 5 units up from (0,0)

Domain: All reals or  $\{x | x \in \mathbb{R}\}$  or  $(-\infty, \infty)$

Range: All reals or  $\{y | y \in \mathbb{R}\}$  or  $(-\infty, \infty)$



8)  $y = 2|x - 3| + 2$

MATH → NUM | 1  
 $V: (3, 2)$   
 opp

\* arrows ok  
 NU constraints given

Parent Function: absolute value,  $y = |x|$

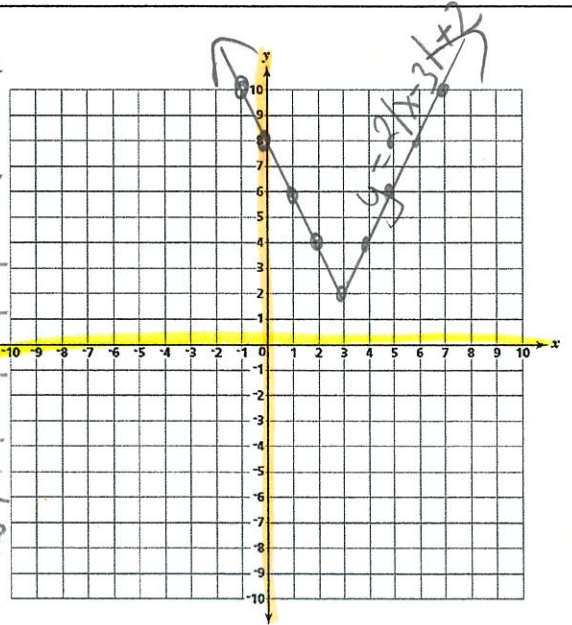
Transformation: narrower by a scale factor of 2 translated 3 units right + 2 units up from (0,0)

Domain: All reals or  $\{x | x \in \mathbb{R}\}$  or  $(-\infty, \infty)$

Range:  $\{y | y \geq 2\}$  or  $[2, \infty)$

X	Y
-1	10
0	8
1	6
2	4
3	2
4	4
5	6
6	8
7	10

\* copy all coordinates you can graph!



9)  $y = \sqrt{x + 5}$

2nd  $x^2$   
 S.P. (-5, 0)  
 Can't have negative radicands

$x + 5 \geq 0$   
 $-5 -5$

Parent Function: square root,  $y = \sqrt{x}$

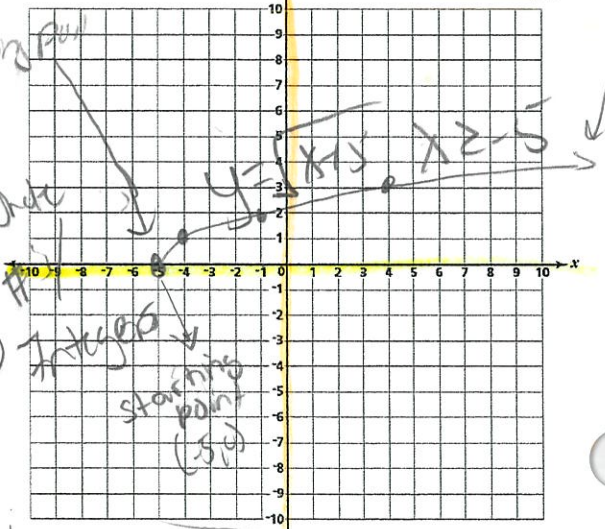
Transformation: translated 5 units left from (0,0)

Domain:  $\{x | x \geq -5\}$  or  $[-5, \infty)$

Range:  $\{y | y \geq 0\}$  or  $[0, \infty)$

X	Y
-5	0
-4	1
-1	2
4	3

Constraints  
 \* arrows only one side of constraints



only copy whole #'s / In teger NU decimals or error



10)  $y = (x - 3)^3 + 5$    
 (3, 5)   
 same   
 up

Parent Function: Cubic,  $y = x^3$

Transformation: Translated 3 units right + 5 units up from (0,0)

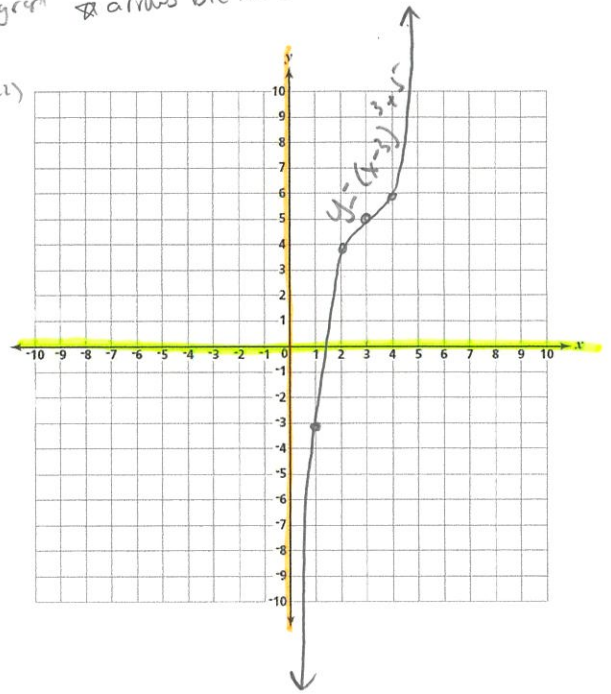
X Domain: all reals or  $\{x | x \in \mathbb{R}\}$  or  $(-\infty, \infty)$

Y Range: all reals or  $\{y | y \in \mathbb{R}\}$  or  $(-\infty, \infty)$

Copy all the points for graph   
 arrows b/c no constraints

X	Y
1	-3
2	4
3	5
4	6

(0, -22)   
 (5, 13)



11)  $y = 2^{x-1}$    
 inside   
 grows

arrows b/c   
 no constraints

Parent Function: Exponential,  $y = 2^x$

Transformation: Translated 1 unit right from (0,1)

X Domain: all real, or  $\{x | x \in \mathbb{R}\}$  or  $(-\infty, \infty)$

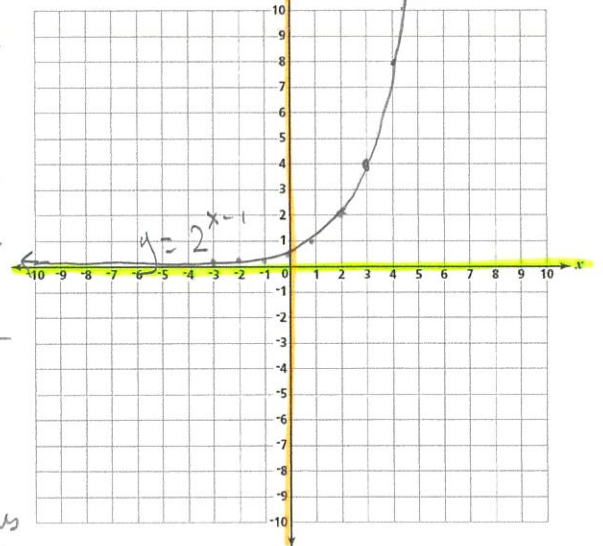
Y Range:  $\{y | y > 0\}$  or  $(0, \infty)$

↑   
 y-values never = 0   
 or negative if the graph   
 isn't translated down   
 (approaches 0, but never = 0)

X	Y
-3	.0625
-2	.125
-1	.25
0	.5
1	1
2	2
3	4
4	8

↑   
 y-values   
 double,   
 yes, copy the decimals   
 (just read every a few)

only in Quad I & II



A graph   
 can't touch   
 the x-axis   
 or go into   
 Quad III

