

Name: _____ Hour: _____ Date: _____

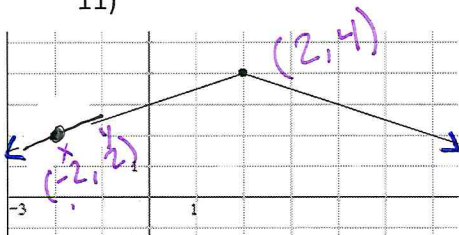
Transformations of Functions Test Review II

DIRECTIONS: Give the name of the function family represented in each equation and describe *all* of the transformations represented.

- 1) $g(x) = 2|x + 1|$
Parent Function: absolute value
Transformation(s): stretch by 2, left 1
- 2) $f(x) = -x^3 + 4$
Parent Function: cubic
Transformation(s): reflect over x-axis, up 4
- 3) $h(x) = \sqrt{-x + 2} - 4$
Parent Function: square root
Transformation(s): reflect over y-axis, left 2, down 4
- 4) $g(x) = \frac{1}{2}(x + 5)^2 - 8$
Parent Function: quadratic
Transformation(s): compress by $\frac{1}{2}$, left 5, down 8
- 5) $f(x) = \frac{1}{2}^{x+4} + 2$
Parent Function: exp. decay
Transformation(s): left 4, up 2
- 6) $g(x) = -3\sqrt[3]{x + 4} - 5$
Parent Function: cube root
Transformation(s): reflect over x-axis, stretch by 3, left 4, down 5
- 7) $h(x) = 2^{x+1} - 7$
Parent Function: exp. growth
Transformation(s): left 1, down 7
- 8) $f(x) = -0.25\sqrt{x} - 2$
Parent Function: square root
Transformation(s): reflect over x-axis, compress 0.25, down 2
- 9) $g(x) = -2x + 1$
Parent Function: linear
Transformation(s): reflect over x-axis, stretch 2, up 1
- 10) $h(x) = 1.5|-x - 3| + 4$
Parent Function: absolute value
Transformation(s): stretch 1.5, reflect over y-axis, right 3, up 4

Directions: For the following graphs name the name of the function family represented, write the equation to represent the transformed function and describe *all* of the transformations. SHOW ALL WORK WHEN NECESSARY.

11)

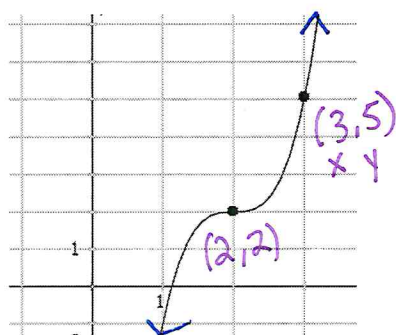


Parent Function: *absolute value*

Equation: $y = a|x-2|+4$
 $2 = a|-2-2|+4$
 $2 = 4a+4$
 $-2 = 4a$
 $a = -1/2$

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

Transformation(S): *reflect over x-axis, compress 1/2, right 2, up 4*



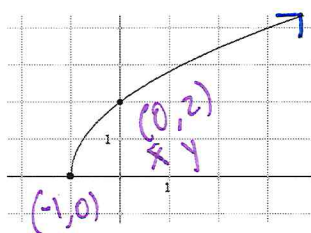
Parent Function: *cubic*

Equation: $y = a(x-2)^3+2$
 $5 = a(3-2)^3+2$
 $5 = 1a+2$
 $3 = 1a$
 $3 = a$

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

Transformation(S): *stretch by 3, right 2, up 2*

13)



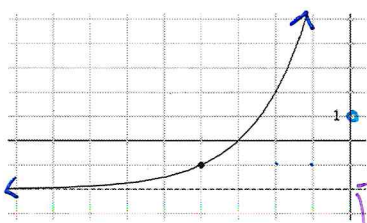
Parent Function: *square root*

Equation: $y = a\sqrt{x+1}$
 $2 = a\sqrt{0+1}$
 $2 = a\sqrt{1}$
 $2 = a$

$$y = 2\sqrt{x+1}$$

Transformation(S): *stretch by 2, left 1*

14)



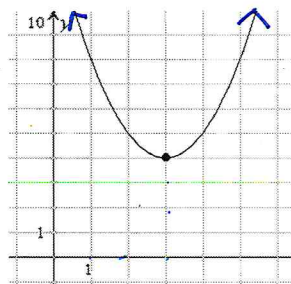
Parent Function: *exp. growth*

Equation:

$$y = 2^{x+4}-2$$

Transformation(S): *left 4, down 2*

15)



Parent Function:

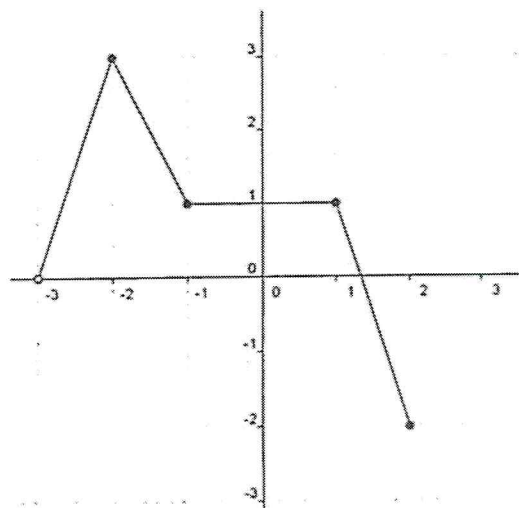
quadratic

Equation:

$$y = (x-3)^2+4$$

Transformation(S): *right 3, up 4*

DIRECTIONS: Use the following arbitrary graph of $y = f(x)$ to describe the transformations and sketch a graph of the transformed function. You must show a table for each transformation.

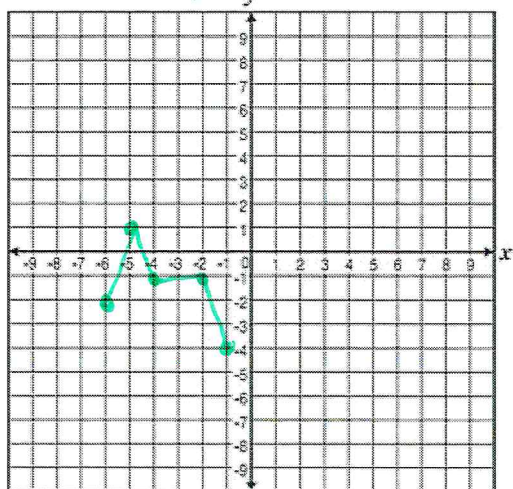


- 16) a) Create a table of values to represent this arbitrary parent function.

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

b) $y = f(x + 3) - 2$

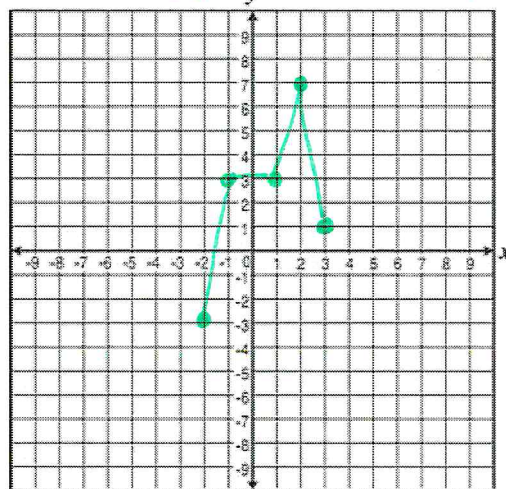
Left 3, down 2



x - 3	y - 2
-3 - 3 = -6	0 - 2 = -2
-2 - 3 = -5	3 - 2 = 1
-1 - 3 = -4	1 - 2 = -1
1 - 3 = -2	1 - 2 = -1
2 - 3 = -1	-2 - 2 = -4

c) $y = 2f(-x) + 1$

stretch 2, reflect over y-axis, up 1



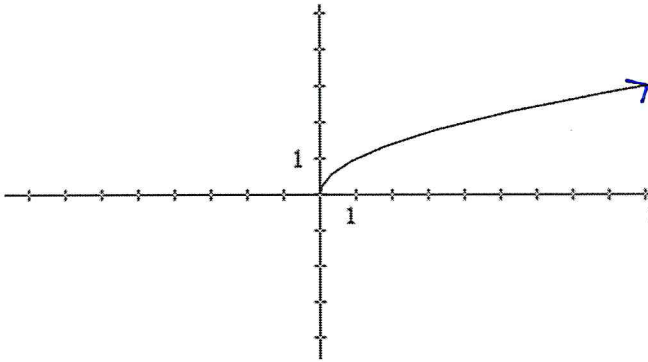
-x	2y + 1
-(-3) = 3	2(0) + 1 = 1
-(-2) = 2	2(3) + 1 = 7
-(-1) = 1	2(1) + 1 = 3
-(1) = -1	2(1) + 1 = 3
-(2) = -2	2(-2) + 1 = -3

*** DON'T FORGET TO DESCRIBE THE TRANSFORMATIONS AND MAKE A TABLE FOR PARTS B & C ***

Content from the Parent Functions Unit

Identify the parent function and each of the key features listed for each graph. (YES, YOU WILL SEE THIS ON THE TEST.)

17)



Function Family: *square root*

Domain: $[0, +\infty)$

Range: $[0, +\infty)$

Increasing Interval: $(0, +\infty)$

Decreasing Interval: *N/A*

x-intercepts: $(0, 0)$

y-intercepts: $(0, 0)$

Asymptotes: *None*

End-Behavior:

Left:

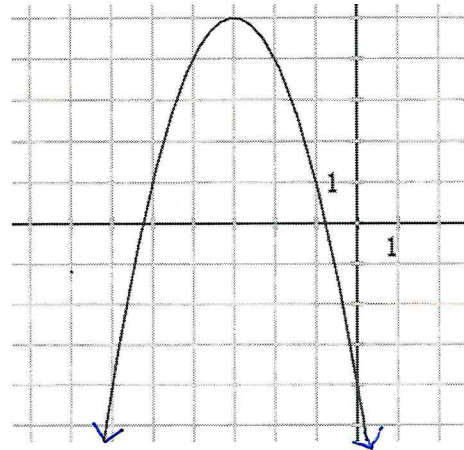
None

Right:

$x \rightarrow +\infty$

$y \rightarrow +\infty$

18)



Function Family: *quadratic*

Domain: $(-\infty, +\infty)$

Range: $(-\infty, 5]$

Increasing Interval: $(-\infty, -3)$

Decreasing Interval: $(-3, +\infty)$

x-intercepts: $(-5.2, 0)$, $(-0.8, 0)$

y-intercepts: $(0, 4)$

Asymptotes: *none*

End-Behavior:

Left:

$x \rightarrow -\infty$

$y \rightarrow -\infty$

Right

$x \rightarrow +\infty$

$y \rightarrow -\infty$