Adv Alg

Name: _____

Date: _____Pd_____

AA2 PRACTICE TEST: TRANSFORMATIONS

I. **MULTIPLE CHOICE**. Circle the correct answer.

1. Function $f(x) = x^2$ is moved one unit right, and one unit down will be written as
   a. $f(x) = (x + 1)^2 - 1$
   b. $f(x) = (x - 1)^2 - 1$
   c. $(x) = (x - 1)^2 + 1$
   d. $(x) = (x + 1)^2 + 1$

2. $f(x) = \frac{1}{x}$ is reflected over the x axis and moved 2 up will be written as
   a. $f(x) = -\frac{1}{x+2}$
   b. $f(x) = \frac{2}{x}$
   c. $f(x) = -\frac{1}{x} + 2$
   d. $f(x) = \frac{1}{x} - 2$

3. Compared with the parent of the absolute function, the function $f(x) = | -(x - 6)| + 3$ is being moved
   a. 6 right, reflected over y-axis, then 3 down
   b. 6 left, reflected over x-axis, then 3 down
   c. 6 right, reflected over y-axis, then 3 up
   d. 6 left, reflected over x-axis, then 3 up

4. Function $y = |x|$ is transformed into $y = 8 - |x - 3|$. It is being moved
   a. 3 left and reflected y-axis, 8 up
   b. 3 right and reflect x-axis, 8 up
   c. 3 left and reflect x-axis, 8 up
   d. 8 left, 3 down, reflected about the y-axis

5. The graph of $f(x) = x^2 - 5$ undergoes the transformation $f(x + 2)$. Its new equation will be
   a. $(x + 2)^2 - 5$
   b. $x^2 - 3$
   c. $x^2 + 2$
   d. $(x - 2)^2 - 5$

6. Given the function $f(x + h) + k$, by changing the value of h, the function will move
   a. right only
   b. up only
   c. up or down
   d. left or right

7. Given the graph $y = f(x - 10) + 12$. When this graph is translated two left and one down, the new equation is
   a. $y = f(x + 2) + 1$
   b. $y = f(x - 12) - 1$
   c. $y = f(x - 8) + 11$
   d. $y = f(x - 8) + 13$

8. Given the function f(x + h) + k. By changing the value of k, the function will move
   a. left or right
   b. right only
   c. up or down
   d. up only

9. The function f(x) is being flipped over the x-axis, its formula for transformation is
   a. –f(x)
   b. 1 – f(x)
   c. f(-x)
   d. f(x – 1)

10. The function f(x) now transform into f(x) – 10. It is being moved
   a. 10 up
   b. 10 left
   c. 10 right
   d. 10 down

11. The original function is $f(x) = x^3 + 5$. The transformed function is $g(x) = x^3 - 5$. It is moved
   a. 5 right and 5 down
   b. 5 down
   c. 5 left and 5 down
   d. 10 down

12. The transformation on 4f(x) is a ….
   a. Horizontal stretch
   b. Vertical stretch
   c. Horizontal compression
   d. Vertical compression

13. The function f(x) is transformed into f(x – 2) + 4. It is being moved
   a. Right 2, up 4
   b. Right 4, down 2
   c. Left 4, up 2
   d. Left 2, up 4

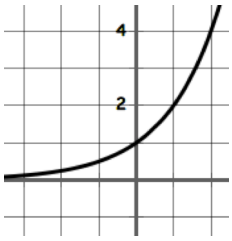
14. The original function is $f(x) = \sqrt[3]{x+3}$. The transforming function is $g(x) = \sqrt[3]{x} + 3$. It is moved
   a. 3 right, 3 up
   b. 3 up
   c. 3 left, 3 up
   d. 3 left

15. The transformation on f(-x) is ….
   a. A shift to the right
   b. Reflection about x-axis
   c. A shift to the left
   d. Reflection about the y-axis

16. Shifting $y = 2^x$ to the left by 1 unit and down by 9 units would yield the equation….
    a. $y = 2^{x+1} - 9$
    b. $y = 2^{x-9} + 1$
    c. $y = 2^{x-1} - 9$
    d. $y = 2^x - 9$
17. The dilation on $y = 2\sqrt{9x}$ is….
    a. Vertical compression by a factor of 2
    b. Horizontal compression by 9
    c. Vertical stretch by 18
    d. Vertical stretch by 6

II. <u>MATCHING</u>. Match the equation with corresponding graph.

a. $f(x) = x$
b. $j(x) = x^3$
c. $g(x) = 2^x$
d. $m(x) = |x|$
e. $h(x) = x^2$
f. $p(x) = \sqrt[3]{x}$
g. $k(x) = \sqrt{x}$



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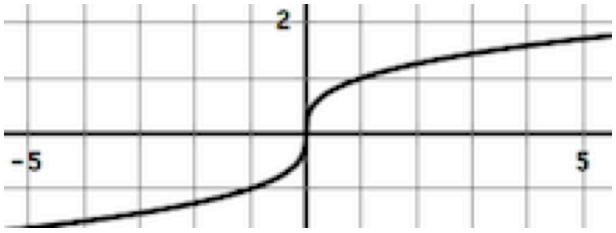

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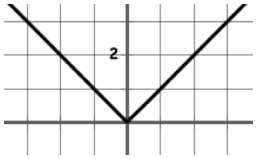

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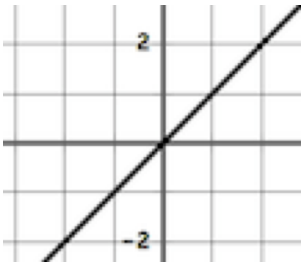

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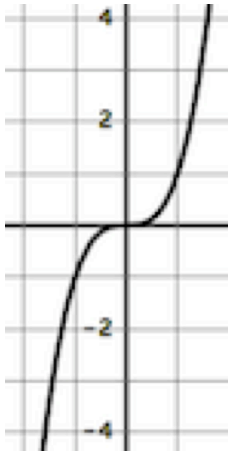

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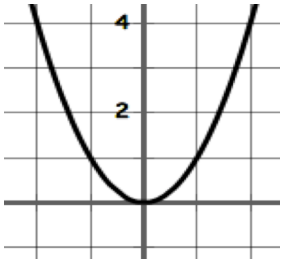

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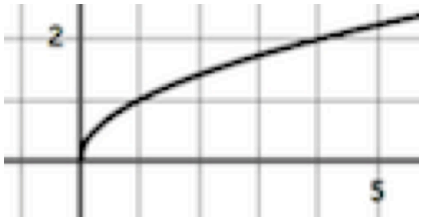


6. _____

III. READ THE DIRECTIONS FOR EACH QUESTION BELOW, THEN ANSWER THE QUESTIONS.

1. Write the equation for the graph of the function g(x), obtained by shifting the graph of $f(x) = x^3$ nine units left, reflecting that result over the x-axis, compressing the graph vertically by half, and shifting the graph up four units.

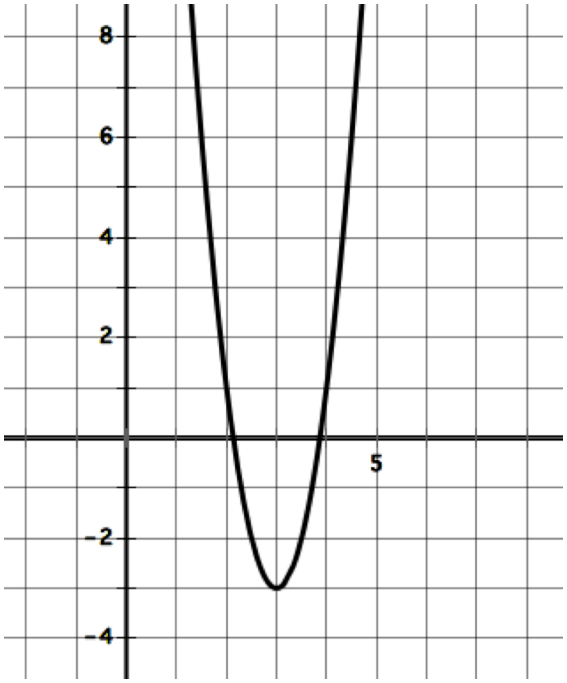
2. Describe the transformations that would produce the graph of the second function from graph of the parent function.

   a. $f(x) = x \rightarrow g(x) = -\frac{1}{2}x - 1$ _____

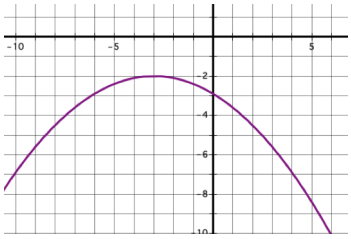
   b. $f(x) = x^2 \rightarrow g(x) = -(x + 1)^2$ _____

   c. $f(x) = \sqrt[3]{x} \rightarrow g(x) = 3\sqrt[3]{-x} + 6$ _____

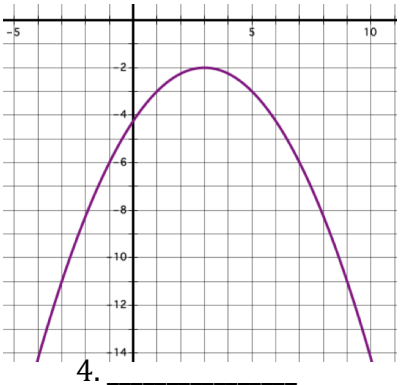
3. Write the equation of the transformed graph.



IV. MATCHING



1. _____



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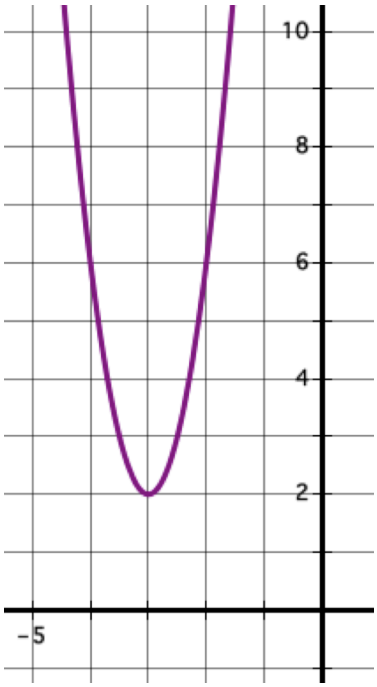

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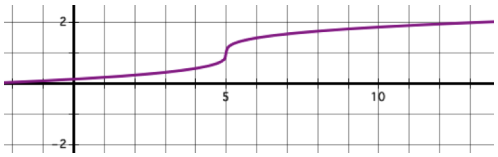

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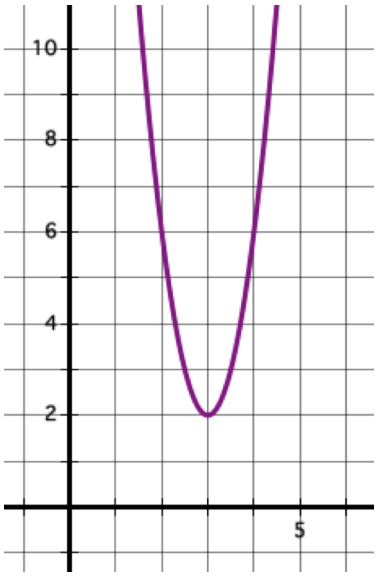

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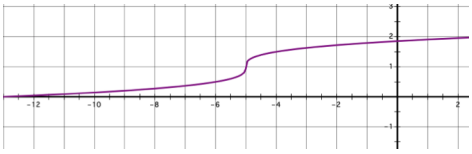

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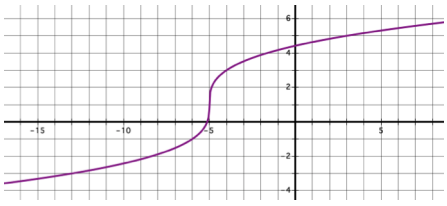

3. _____

a. $g(x) = -\frac{1}{10}(x+3)^2 - 2$

b. $h(x) = 2\sqrt[3]{x+5} + 1$

c. $j(x) = 4(x-3)^2 + 2$

d. $m(x) = -\frac{1}{4}(x-3)^2 - 2$

e. $n(x) = \frac{1}{2}\sqrt[3]{x+5} + 1$

f. $p(x) = 4(x+3)^2 + 2$

g. $r(x) = \frac{1}{2}\sqrt[3]{x-5} + 1$