2.3 Transformations

2023-2024

SCORE: /

Name _____ Date _____ Period _____

For each function below:

- State the name of the parent function.
- Describe the transformations made from the parent function.
- Then match each equation to the graph below.

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

Parent function:

Transformations:

Letter of graph:

2. $f(x) = \sqrt{x+7} + 2$

Parent function:

Transformations:

Letter of graph:

3. $f(x) = |x+2| - 4$

Parent function:

Transformations:

Letter of graph:

4. $f(x) = -\frac{1}{2}(x-3)^2 + 5$

Parent function:

Transformations:

Letter of graph:

5. $f(x) = \sqrt{-x} - 1$

Parent function:

Transformations:

Letter of graph:

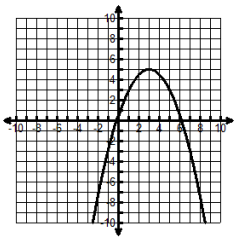
6. $f(x) = -|x-4|$

Parent function:

Transformations:

Letter of graph:

A.



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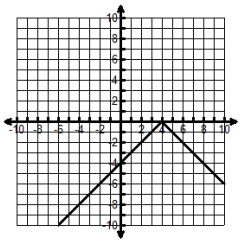

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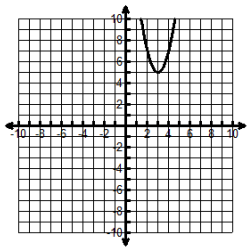

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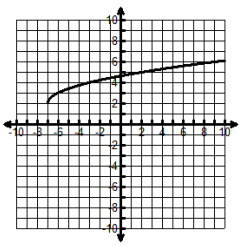

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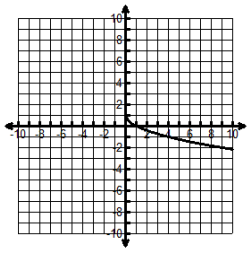

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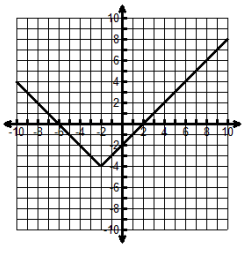

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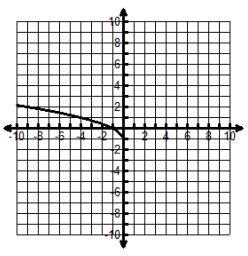

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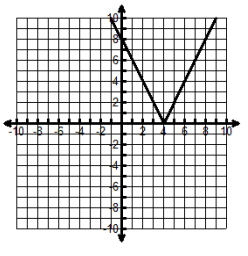


For each function below:

- State the name of the parent function.
- Describe the transformations made from the parent function.
- Then match each equation to the graph below.

7. $f(x) = 4(x-3)^3 + 5$

Parent function:

Transformations:

Letter of graph:

8. $f(x) = -\sqrt[3]{x-7} + 2$

Parent function:

Transformations:

Letter of graph:

9. $f(x) = -(x-5)^3 + 3$

Parent function:

Transformations:

Letter of graph:

10. $f(x) = \sqrt[3]{-x} - 1$

Parent function:

Transformations:

Letter of graph:

11. $f(x) = \sqrt[3]{x+7} + 2$

Parent function:

Transformations:

Letter of graph:

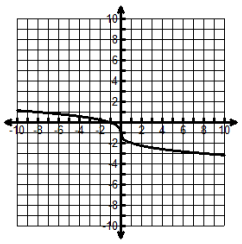
12. $f(x) = -\frac{1}{4}(x-3)^3 + 5$

Parent function:

Transformations:

Letter of graph:

A.



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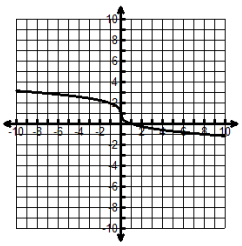

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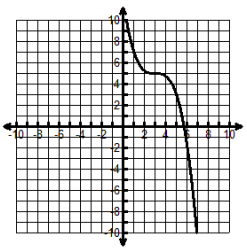

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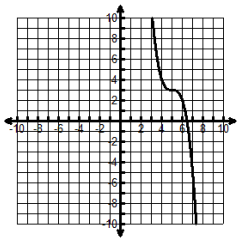

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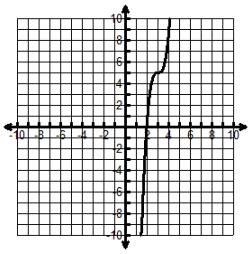

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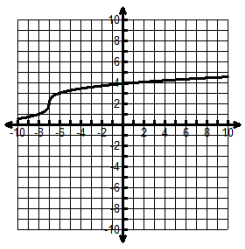

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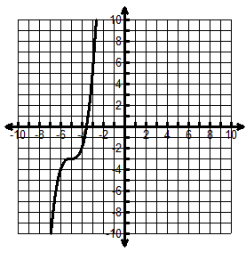

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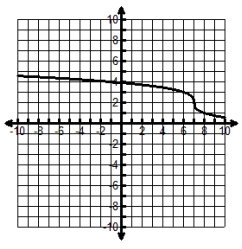


Given the parent function, and a list of the transformations; write an equation for the function.

13. **Parent Function:** $f(x) = |x|$

Transformations: Reflection over the *x*-axis, Left 5, Up 2

14. **Parent Function:** $f(x) = \sqrt[3]{x}$

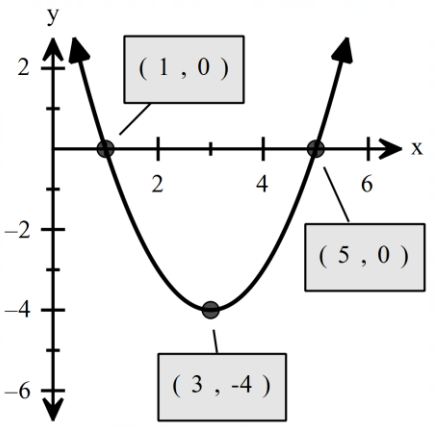
Transformations: Vertical compression by $\frac{1}{4}$, Left 4, Down 3

15. **Parent Function:** $f(x) = x^3$

Transformations: Reflection over the *y*-axis , Up 1

Determine the transformations that were used to change the given parent function to the function that is graphed. Then write an equation for the function graphed.

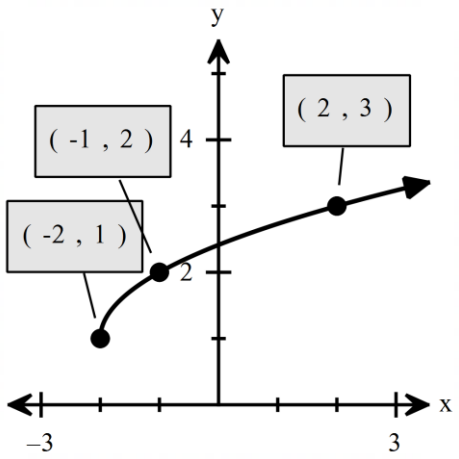
16.



Transformations:

Equation:

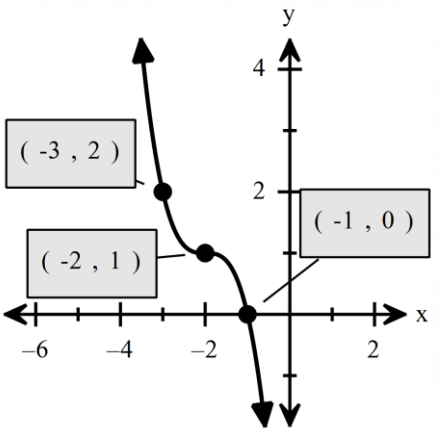
17.



Transformations:

Equation:

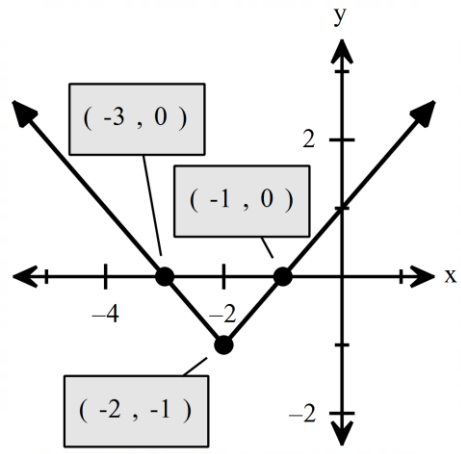
18.



Transformations:

Equation:

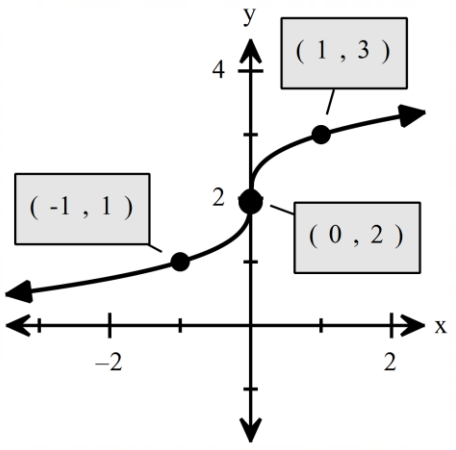
19.



Transformations:

Equation:

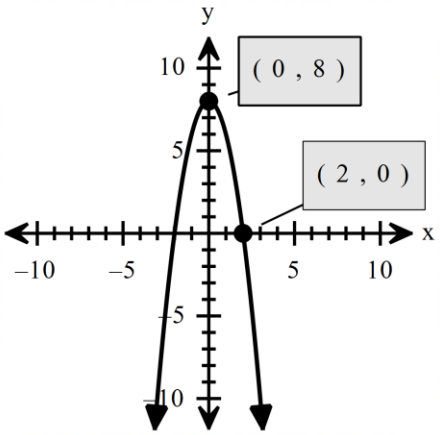
20.



Transformations:

Equation:

21.

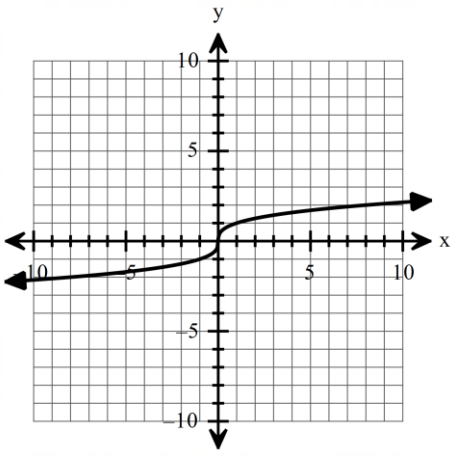


Transformations:

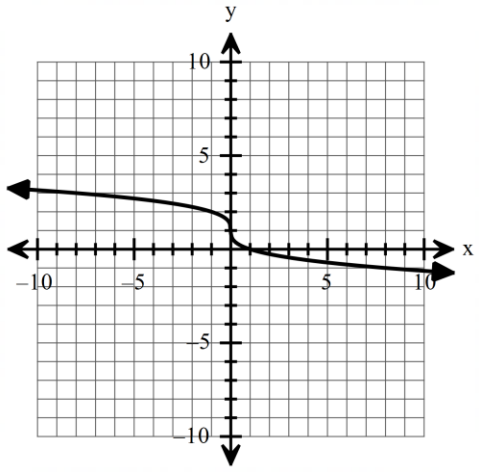
Equation:

Using the given functions with their given graphs, compare and contrast the key features by answering the following questions.

A. $y = \sqrt[3]{x}$

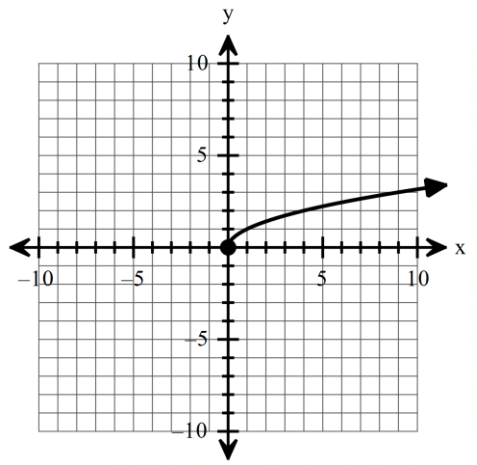


B. $y = -\sqrt[3]{x} + 1$

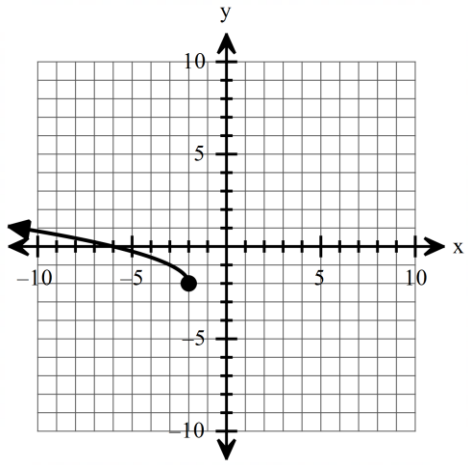


QUESTION	FUNCTION A	FUNCTION B
22. List the transformations.		
23. Is the function increasing or decreasing?		
24. List the $y-$intercept.		
25. Write the positive interval(s) in interval notation.		
26. What transformation(s) affects the increasing or decreasing feature of a function?		
27. What transformation(s) affects the $y-$intercept?		
28. Why did the positive interval(s) change?		

C. $y = \sqrt{x}$



D. $y = \sqrt{-(x+2)} - 2$



QUESTION	FUNCTION C	FUNCTION D
29. List the transformations.		
30. Write the domain in interval notation.		
31. Write the range in interval notation.		
32. List the x −intercept(s).		
33. Write the negative interval(s) in interval notation.		
34. Does the function have a maximum or minimum point?		
35. What is the maximum or minimum point?		
36. What transformation(s) affects the domain?		
37. What transformation(s) affect the range?		
38. What transformation(s) affects the x −intercept?		
39. What transformation(s) affects the negative interval(s)?		