Warm-Up

$$y = \frac{36}{x - 18} + 43$$

horizontal asymptote: $y = 43$

vertical asymptote: $x = 18$

Domain: $x \neq 18$

Range: $y \neq 43$

"vertex": $(18, 43)$

Quadrants: 1

transformations: R18, U43, 5 by 36

Distance from intersection of asymp. to

Explain the domain: undefined at $x = 18$

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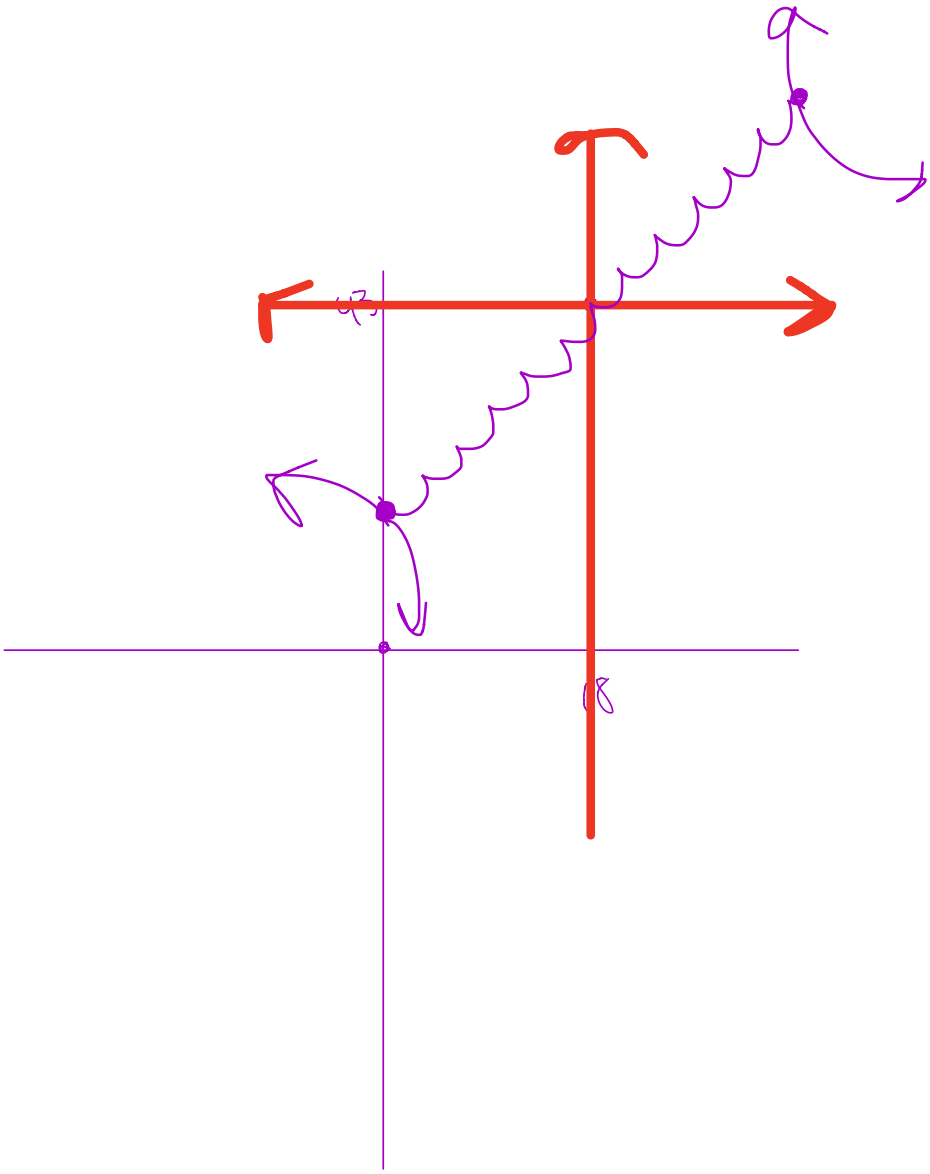
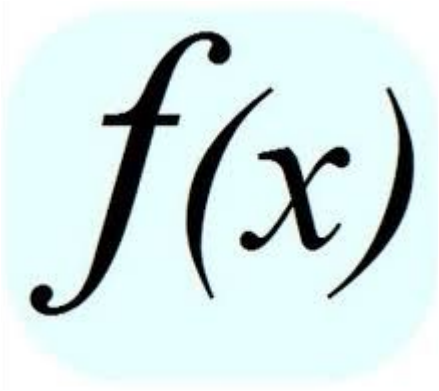


6.7 Let's Make a Function

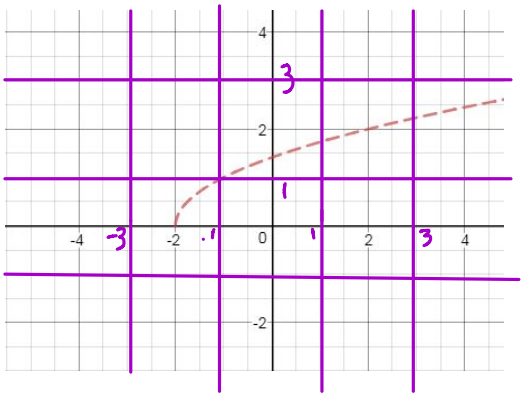
A Practice Understanding Task



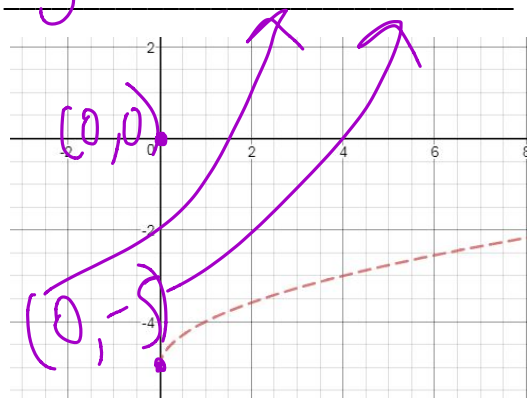
For this activity, you will be using what you have learned about radical functions and inverse variation functions and transformations to write the equation of a transformed function given a graph.

In the following graphs, a transformed function is represented with dashed lines. For each graph, determine whether the parent function is a square root function , $y = \sqrt{x}$, or an inverse variation function, $y = \frac{1}{x}$, and which transformation(s) have occurred. Then write the equation of the transformed function. (graphs created using Desmos)

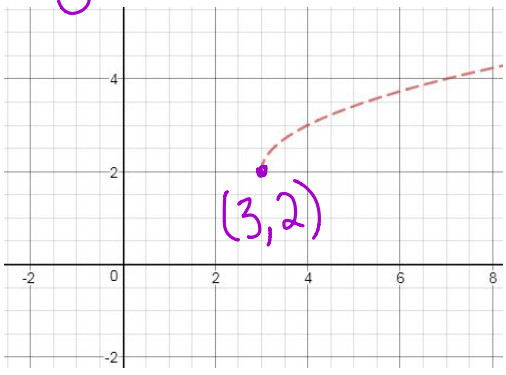
1. $y = \sqrt{x+2}$



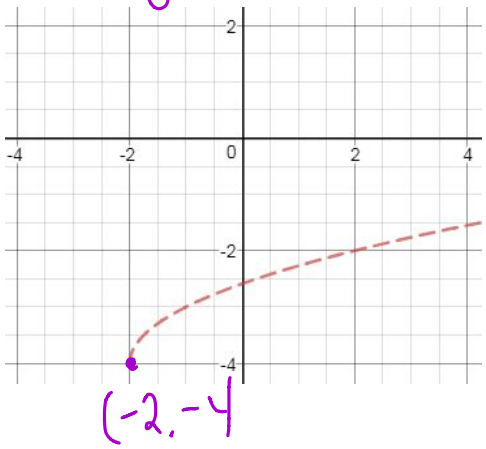
2. $y = \sqrt{x} - 5$



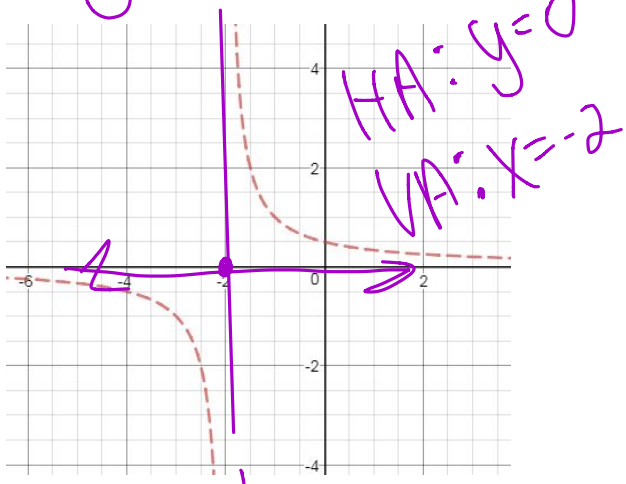
3. $y = \sqrt{x-3} + 2$



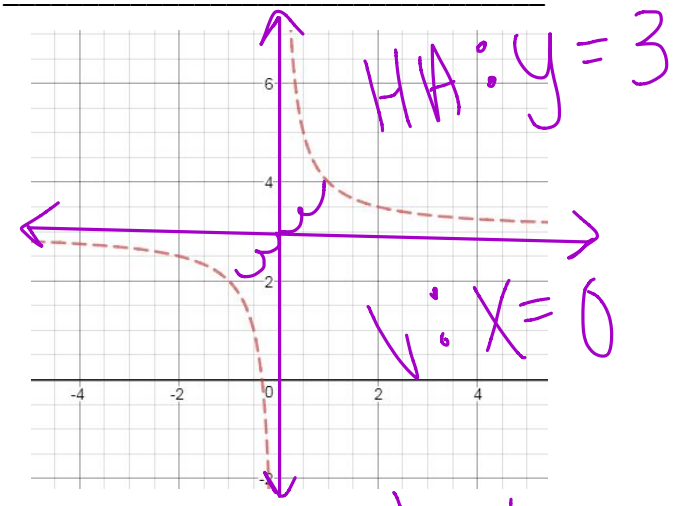
4. $y = \sqrt{x+2} - 4$



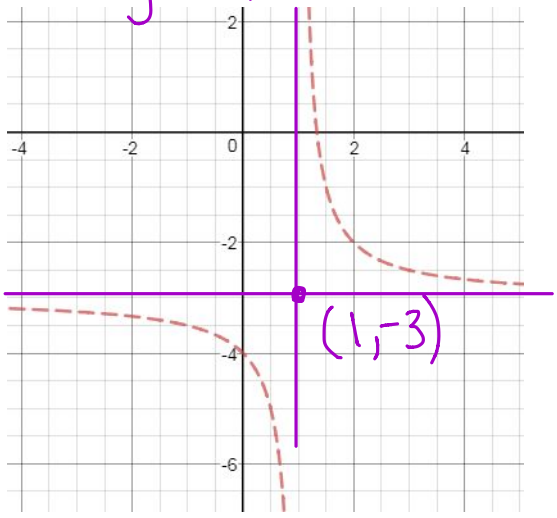
5. $y = \frac{1}{x+2}$



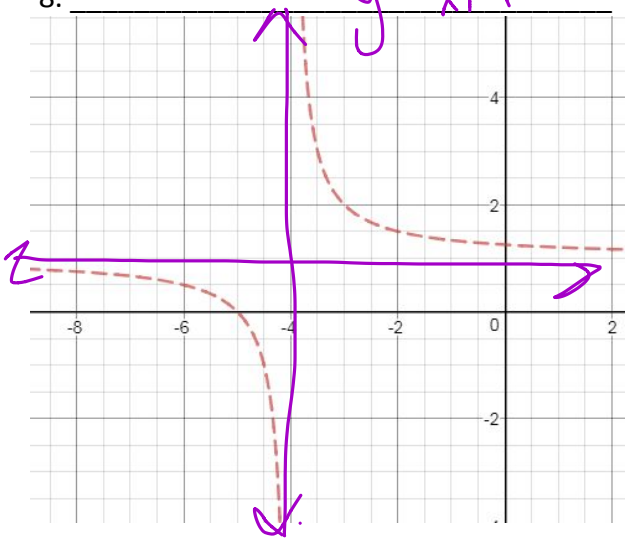
6. $y = \frac{1}{x} + 3$



7. $y = \frac{1}{x-1} - 3$



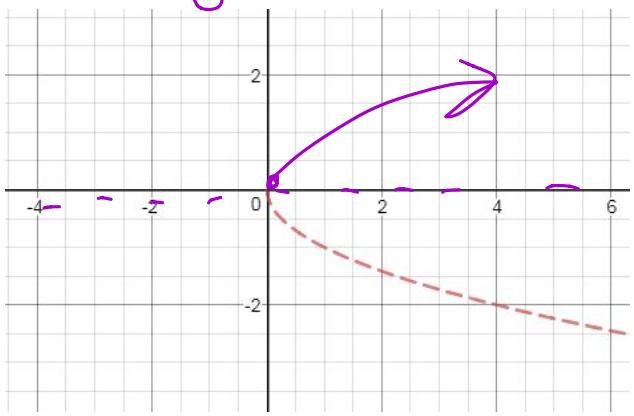
8. $y = \frac{1}{x+4} + 1$



Which type of transformation occured in problems 1-8?

For the next few problems, a different type of transformation has been applied. You may also still see some of the previous type of transformation as well. Watch out as you write the equations!

9. $y = -\sqrt{x}$



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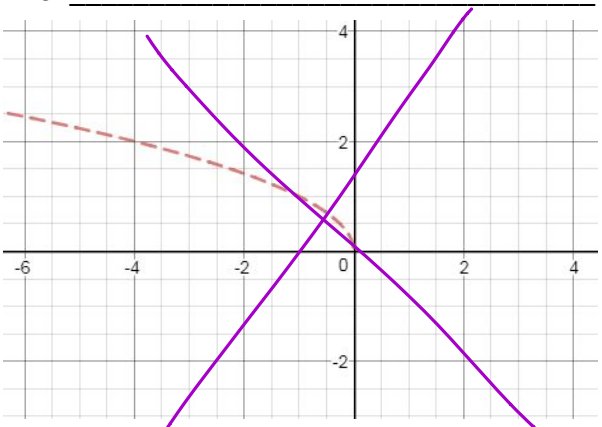
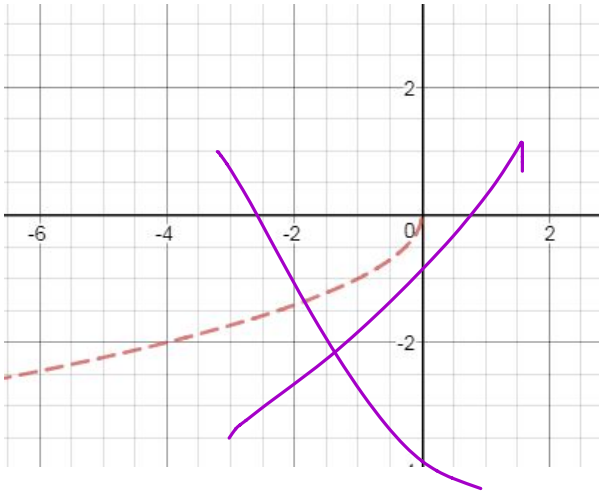
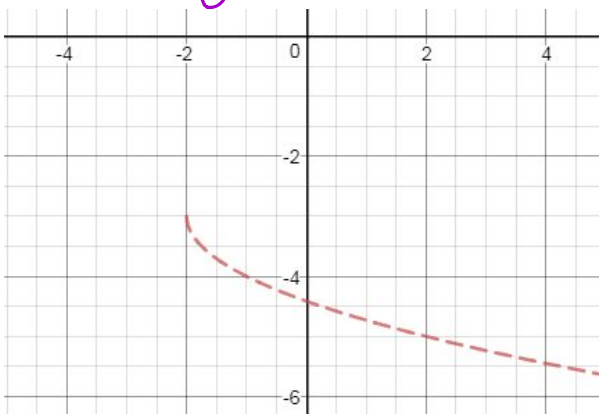


11. _____



12. $y = -\sqrt{x+2}-3$



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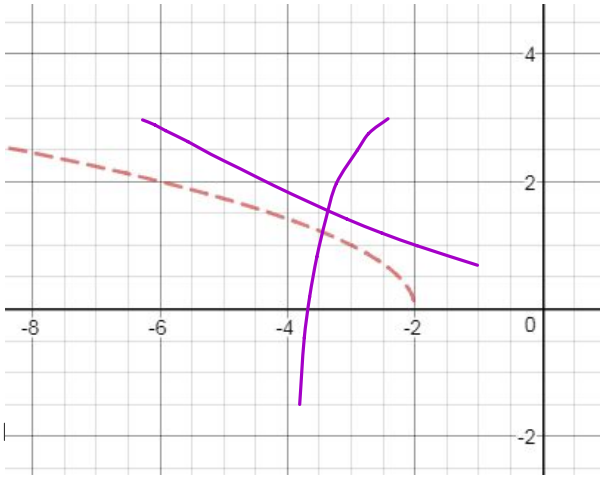
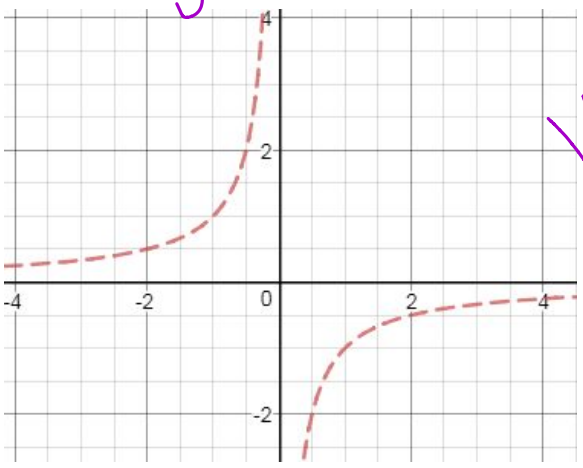


14. $y = -\frac{1}{x}$



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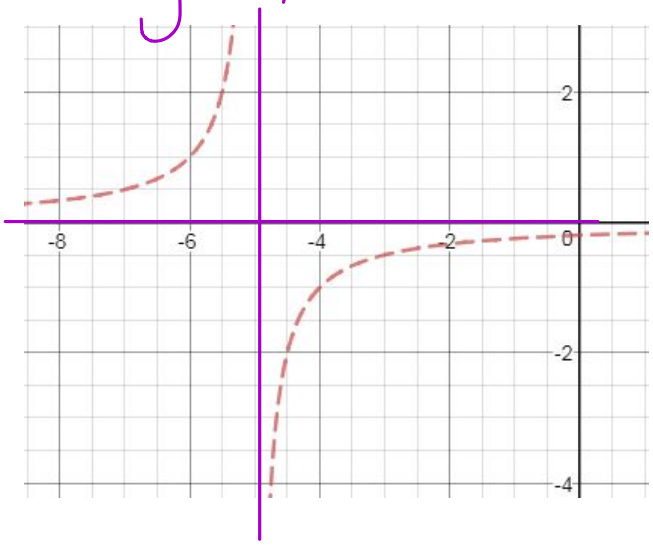
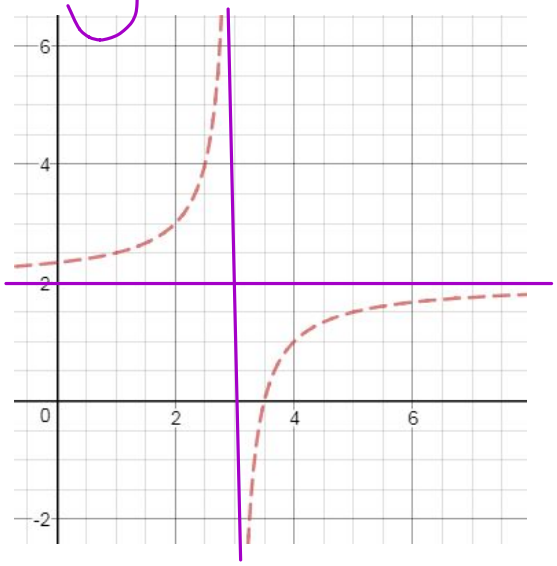
15. $y = -\frac{1}{x+5}$



16. $y = -\frac{1}{x-3} + 2$

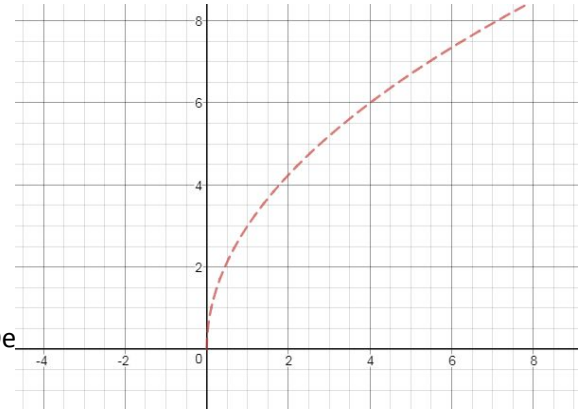


Which type of transformation was added in problems 9-16? How is this type of transformation different for radical functions as compared to inverse variation functions? Explain.

reflection

For the next few problems, yet another type of transformation has been applied. You may also still see some of the previous types of transformations as well. Be careful!

17. _____



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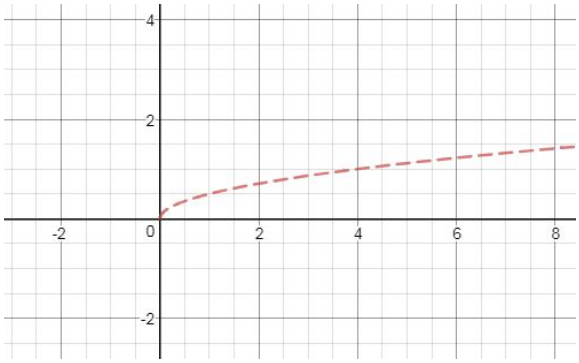
18. _____



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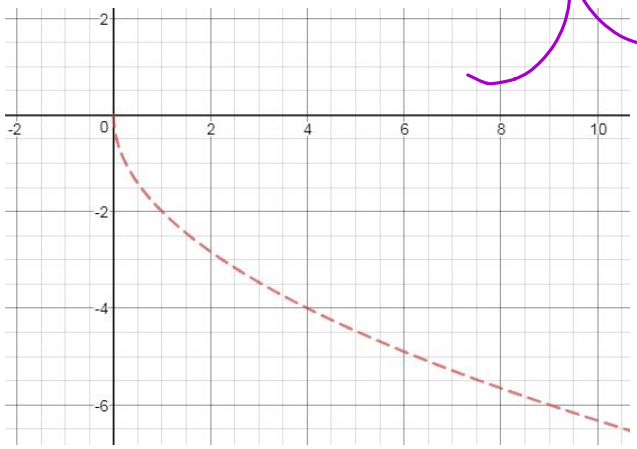
19. _____



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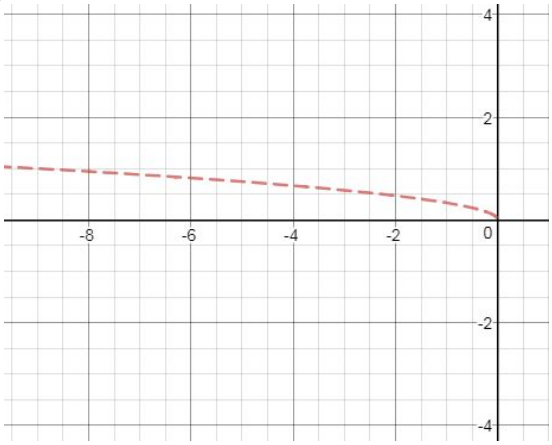

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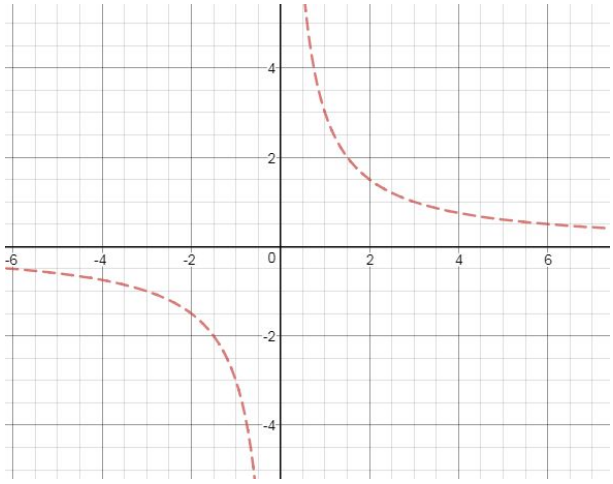

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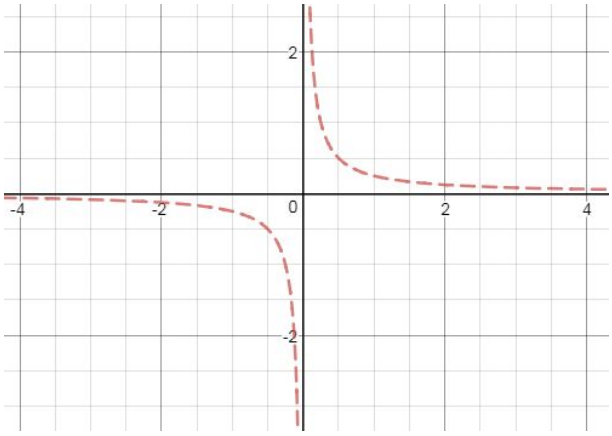

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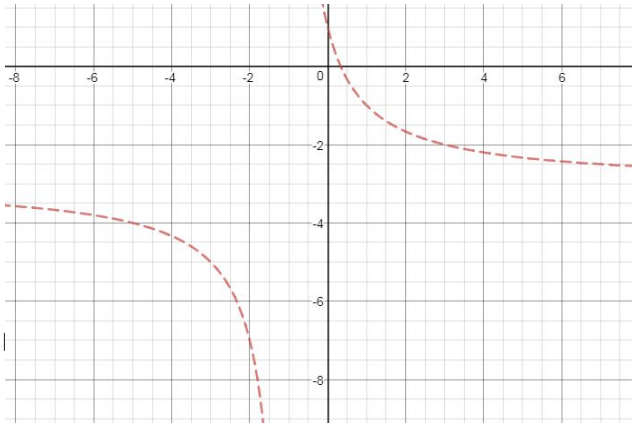

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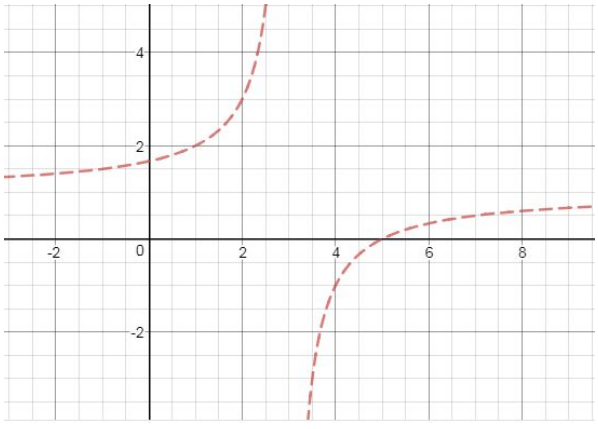
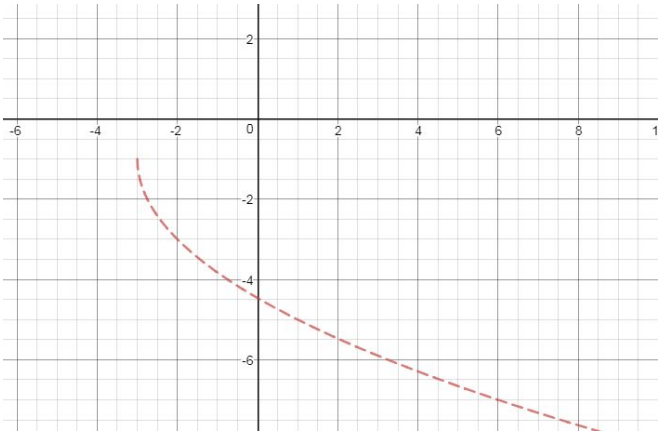


When applying a dilation to a function, the equation of the parent function is multiplied by a coefficient. Describe the effect different types of coefficients have on the shape of a function.

For these last few problems, all types of transformations are combined. You can do this!

25. _____



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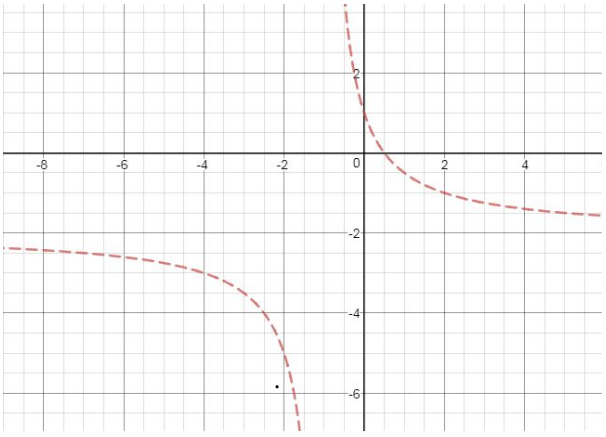
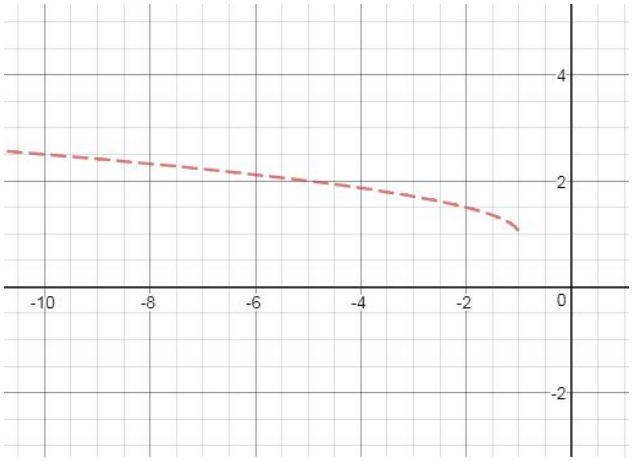
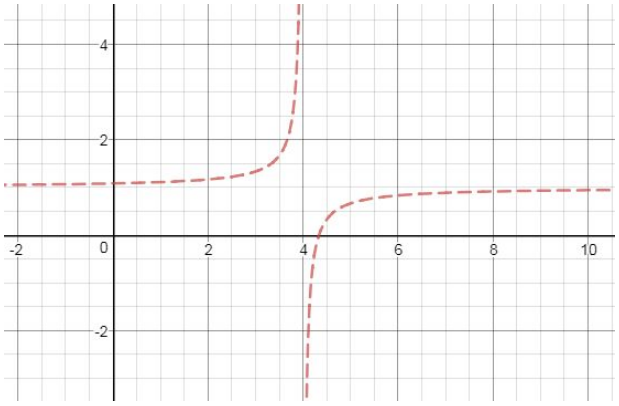


27. _____

28. _____


4
2
-10
-8
-6
-4
-2
0
-2


4
2
-2
0
2
4
6
8
10
-2

READY, SET, GO! Name _____ Period _____ Date _____

READY

Topic: Solving Proportions.

Find the value of x in each equation.

1. $\frac{2}{x} = \frac{8}{20}$

2. $24 = \frac{36}{x}$

3. $\frac{9}{16} = \frac{6}{x}$

4. $\frac{x+1}{20} = \frac{1}{2}$

5. $\frac{35}{2x-3} = \frac{70}{34}$

6. $\frac{10}{x} = 8$

SET

Topic: Transformations of Functions.

Given the following descriptions of transformations, write the new function of the transformed graph.

7. From the parent graph $f(x) = x^2$ the graph has been shifted 3 units to the right and 4 units up.

8. From the parent graph $f(x) = \sqrt{x}$ the graph has been shifted 2 units to the left and one unit down.

9. From the parent graph $f(x) = \frac{1}{x}$ the graph has been shifted six units to the right and five units down.

10. From the parent graph $f(x) = x^2$ the key points of (0, 0), (1, 1), and (2, 4) are now (0, 0), (1, 0.5), and (2, 2).

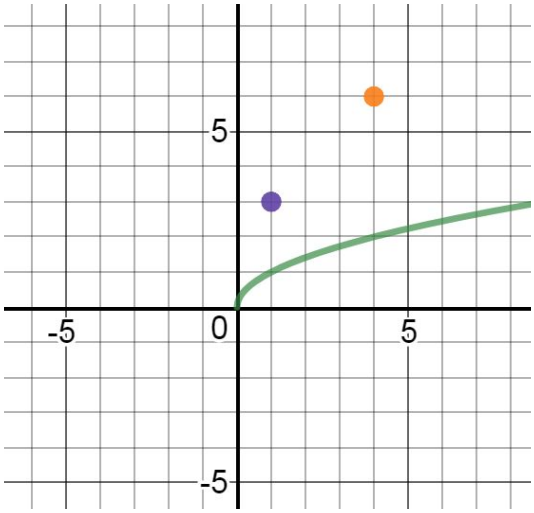
11. From the parent graph $f(x) = \sqrt{x}$ to $g(x)$ given in the table below.

x	f(x)
0	0
1	1
4	2
9	3

x	g(x)
0	0
1	4
4	8
9	12

Given the following parent graphs, write the new function of the transformed graph that will go through the given ordered pairs.

12.



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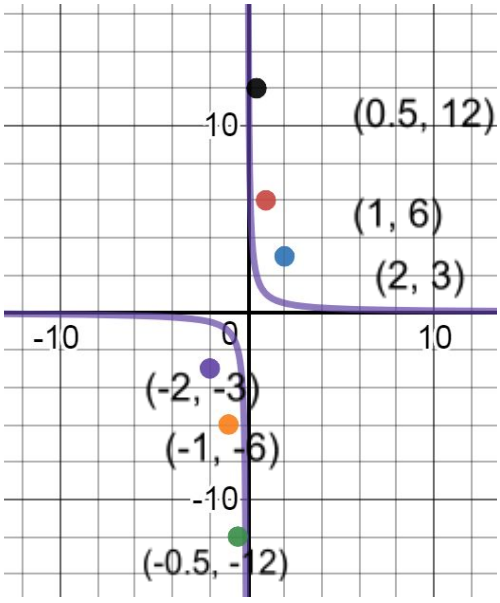
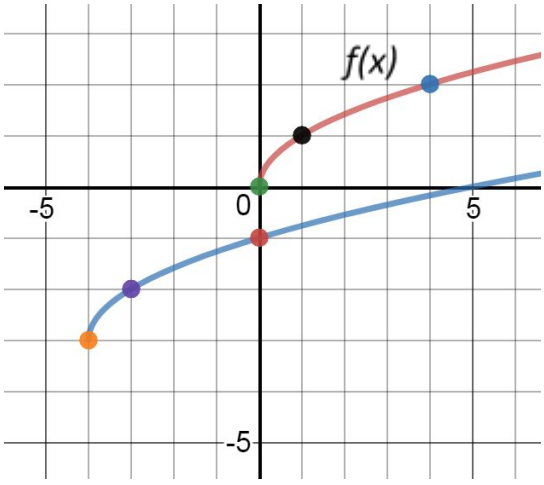


Given the following parent graphs $f(x)$, write the new function of the transformed graph that is shown.

14.



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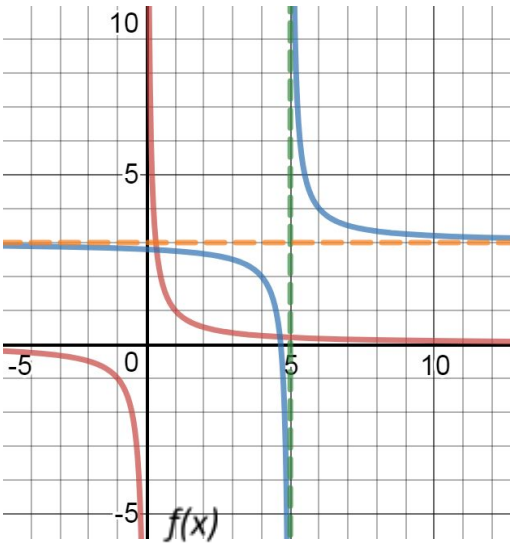

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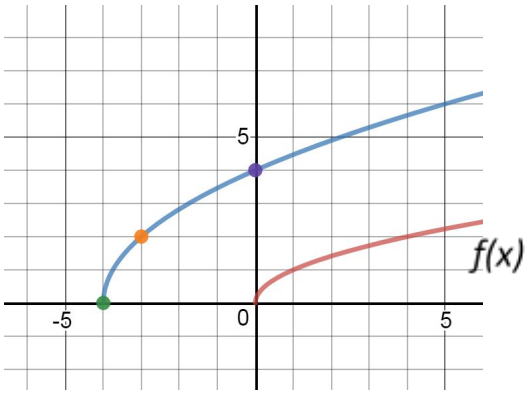

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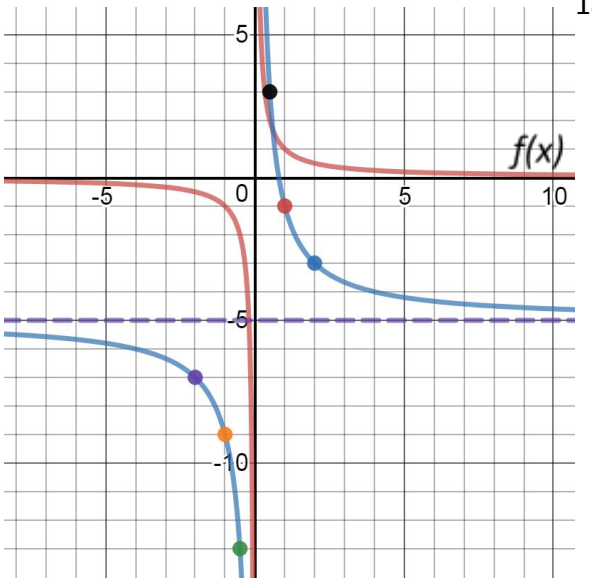

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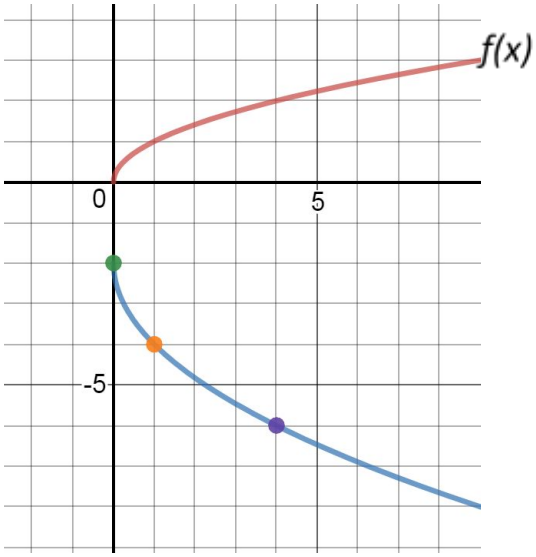

GO!

Topic: Different forms of a quadratic function.

19. Given the quadratic function: $y = (x-4)(x+5)$, re-write the function in standard form.

20. Given the quadratic function: $y = x^2 - 2x - 48$ re-write the function in factored form.

21. Given the quadratic function: $y = x^2 + 16x + 71$ re-write the function in vertex form.

22. Given the quadratic function: $y = (x+2)^2 - 4$ re-write the function in standard form.

23. Given the quadratic function: $y = (x-3)^2 - 4$ re-write the function in factored form.

24. Given the quadratic function: $y = (x-5)(x-3)$ re-write the function in vertex form.

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