

Radical Functions

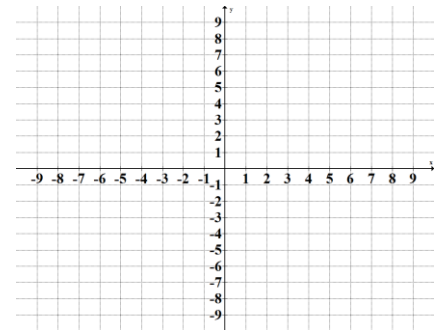
1. Given the function, $y = -\sqrt{x-4}+5$, answer the following:

Domain:

Range:

maximum value:

minimum value:



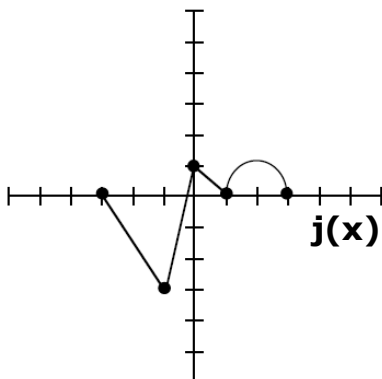
2. Given $y = \sqrt{x}$, write the equation of the graph that has been horizontally compressed, shifted up 2 units, and reflected over the y-axis.

3. Given $y = \sqrt[3]{x}$, write the equation of the graph that has been vertically compressed by a factor of $\frac{1}{4}$, shifted right 3 units, and up 7 units.

4. In your own words, describe how the graph of $f(x) = 3\sqrt{x-4} + 1$ has been transformed to the graph $g(x) = \frac{1}{3}\sqrt{x+5} - 2$.

Inverses

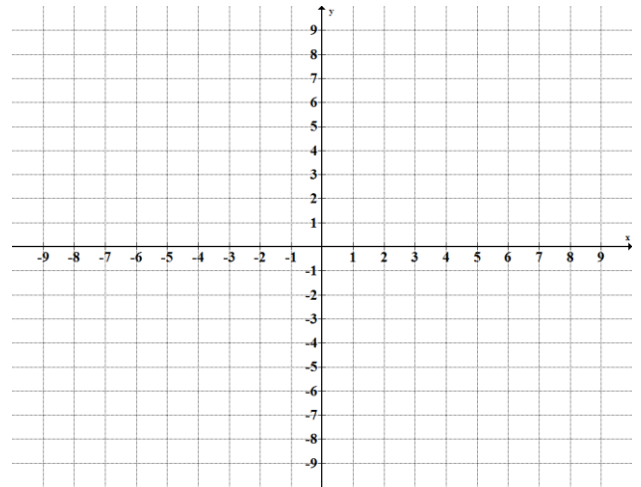
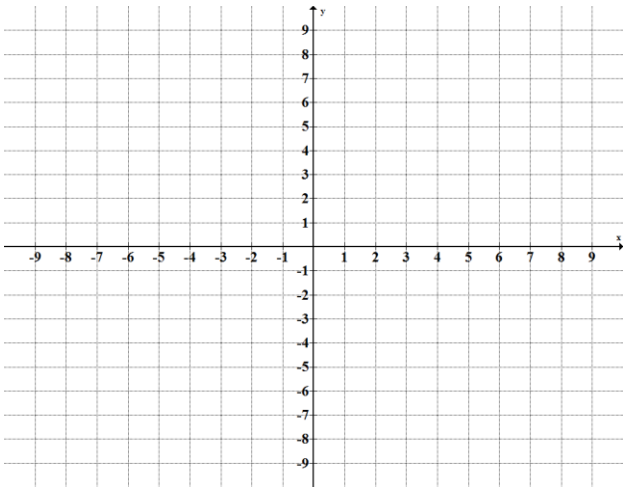
5. Graph the inverse of the function $j(x)$ on the same grid. (*Hint: key points*)



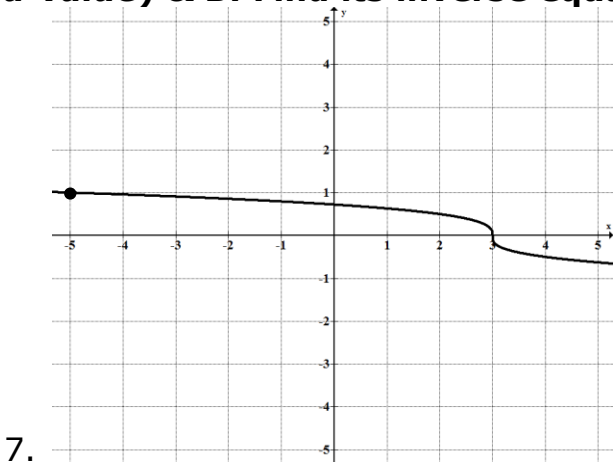
6. Graph the following equation. Then, solve for the inverse of the given equation and graph it in the second coordinate grid.

$$f(x) = \sqrt{x+5} + 3$$

Inverse Equation:

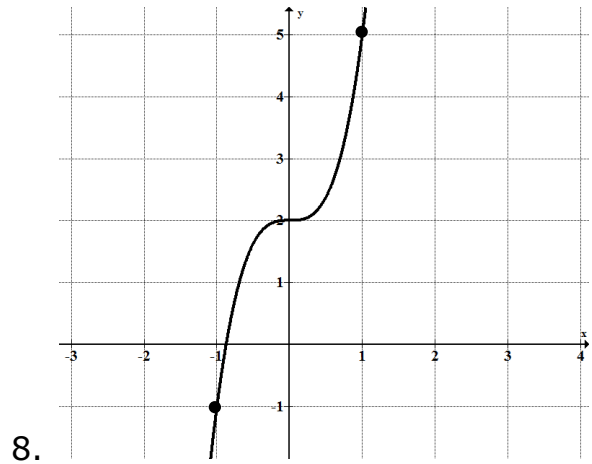


For 7-8, given the graphs- A: Find the function equation (*make sure to find the a-value*) & B: Find its inverse equation.



A: _____

B: _____



A: _____

B: _____

For 9-11, use the following functions to find the indicated compositions:

$$f(x) = x^2 - 5, \quad g(x) = 3x + 1, \quad h(x) = \frac{1}{x}$$

9. $h(f(g(2)))$

11. $h(g(f(x)))$

10. $(g \circ f)(-1)$

For 12-14, use composition of functions to verify that the given two functions are inverses of each other:

12. $f(x) = (x+3)^2, \quad g(x) = \sqrt{x} - 3$

13. $f(x) = (x-5)^3, \quad g(x) = \sqrt[3]{x+5}$

14. $f(x) = \frac{1}{5}(x+1)^2, \quad g(x) = \sqrt{5x} - 1$

15. Find the inverse of $f(x) = 2(x+1)^2 + 3$ with domain $x \leq -1$.

16. Find the inverse of $f(x) = -\frac{1}{3}x + 5$.

Simplifying Radical Equations

Simplify the following :

17. $(xy)^{\frac{1}{4}}(x^2y^2)^{\frac{3}{2}}$

18. $(x^4y^8)^{\frac{7}{4}}$

19. $(9x^{-3})(2xy)^0$

Solving Radical Equations

20. Solve $\sqrt[3]{5x-1} = 4$

22. Solve $\sqrt{3x+1}-1=4$

21. Solve $(x-2)^{\frac{3}{4}} = 27$

23. Solve $(x+1)^{\frac{1}{3}} + 11 = 9$

24. If 3 is a solution to the equation $\sqrt{2ax-2} = \sqrt{7a+4}$, then what is the value of "a"?