

Secondary Math III**Unit 8 Review**

Assignment 8.7

Name: _____

Period: _____

*Show work for credit.***Multiple Choice.**

- Which of the following is a function that shifts the graph of $f(x) = \sqrt{x}$ to the left 5 units?
 - $g(x) = \sqrt{x} - 5$
 - $g(x) = \sqrt{x} + 5$
 - $g(x) = \sqrt{x-5}$
 - $g(x) = \sqrt{x+5}$
- Which expression is equal to $\sqrt{18x^2y^5z^8}$? Assume all variables to be positive.
 - $9xy^2z^4$
 - $2x^2y^3z^4\sqrt{9y}$
 - $3xy^2z^4\sqrt{2y}$
 - $6xy^4z^6\sqrt{3yz^2}$
- When the expression $3\sqrt{2x^2} - 2x\sqrt{32} + \sqrt{50x^2}$ is simplified, it is equivalent to:
 - 0
 - $-8x\sqrt{2}$
 - $16x\sqrt{2}$
 - $3\sqrt{52x^2} - 16x\sqrt{2}$
- Which type of transformation changes the graph of $f(x) = \sqrt{x}$ into the graph of $g(x) = \sqrt{3x}$?
 - a vertical stretch
 - a vertical compression/shrink
 - a horizontal stretch
 - a horizontal compression/shrink
- Which is an extraneous solution of the equation $6 + \sqrt{x} = x$?
 - $x = 4$
 - $x = 9$
 - $x = -4$
 - $x = -9$
- In order for $g(x)$ to be an inverse of $f(x)$, $f(g(x))$ must equal ...
 - 1
 - 1
 - x
 - x

7. What is the exponential form of $\sqrt[3]{x^2}$?

a. $x^{-\frac{2}{3}}$

b. $x^{-\frac{3}{2}}$

c. $x^{\frac{2}{3}}$

d. $x^{\frac{3}{2}}$

8. If $f(x) = x - 3$ and $g(x) = \sqrt{2x}$, then $(g \circ f)(15) =$

a. $2\sqrt{6}$

b. $3\sqrt{6}$

c. $15\sqrt{30} - 3$

d. $\sqrt{30} - 3$

Free Response. SHOW ALL WORK for credit.

Given $f(x) = 2x^2 - 8$, $g(x) = x^2 + 5x + 6$, and $h(x) = 2x + 4$, find and simplify the combined function and state the domain.

9. $(f + g)(x)$

10. $(f - g)(x)$

11. $\left(\frac{g}{h}\right)(x)$

12. $\left(\frac{h}{f}\right)(x)$

13. $f(h(x))$

14. $(h \circ g)(x)$

15. Given $f(x) = \frac{x - 2}{5}$

a. Find the inverse function. Name it $g(x)$.

b. Show that $f(x)$ and $g(x)$ found in part a are inverse by finding and simplifying $f(g(x))$ and $g(f(x))$. Show all steps!

Given $f(x) = x^2 - 9$ and $g(x) = \sqrt{2x + 1}$, find the following:

16. $(f - g)(4)$

17. $g(f(3))$

18. $\left(\frac{g}{f}\right)(12)$

19. $(g \circ f)(0)$

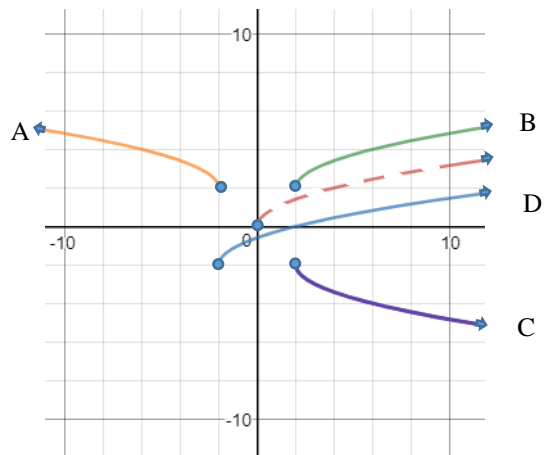
Describe the transformations of each function from $f(x) = \sqrt{x}$. Then match each function to its graph.

20. $g(x) = \sqrt{x+2} - 2$

21. $h(x) = \sqrt{x-2} + 2$

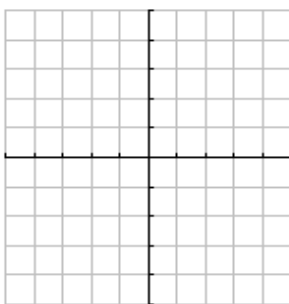
22. $j(x) = \sqrt{-(x+2)} + 2$

23. $k(x) = -\sqrt{x-2} - 2$

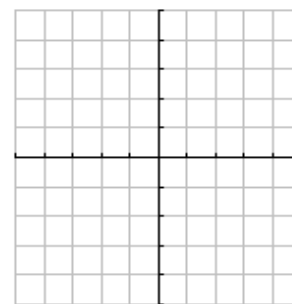


Find the inverse of f . Determine the domain and range of both f and f^{-1} . Graph both.

24. $f(x) = 2x + 1$



25. $f(x) = \sqrt{x-3}$



Domain of f

Domain of f^{-1}

Domain of f

Domain of f^{-1}

Range of f

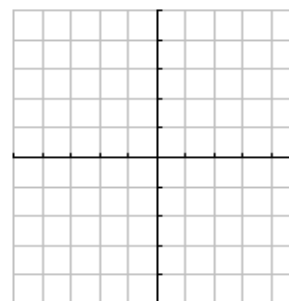
Range of f^{-1}

Range of f

Range of f^{-1}

Restrict the domain so that the f function is one-to-one. Then find f^{-1} . State the domain and range of both, and graph both functions.

26. $f(x) = (x-4)^2$



Domain of f

Domain of f^{-1}

Range of f

Range of f^{-1}

Simplify. Positive Exponents only. Rationalize any denominators. Assume all variables to be positive.

27. $\sqrt{32x^3} + x\sqrt{8x}$

28. $\sqrt{\frac{x^5}{45}}$

29. $\frac{12}{\sqrt[3]{4}}$

30. $\frac{6}{\sqrt{5}}$

Solve. Check your answers.

31. $\sqrt{3x} = 6$

32. $(2x+5)^{\frac{1}{3}} = 3$

33. $\sqrt{-4x+37} = -x+4$

34. The relationship between the length of a pendulum L (in feet) and its period T (in seconds) is modeled by the equation $T = 2\pi\sqrt{\frac{L}{32}}$. To the nearest foot, which is the length of a pendulum with period 8 seconds?

35. The price of a certain kind of computer is decreasing. A recent survey shows that the price of Acer 5950G is calculated by the function $P(t) = 823\sqrt{4-0.32t}$, where P is the price (measured in dollars) and t is the time (measured by years). Find the price of this computer after three years. Round your answer to the hundredths place.