

Each of the following represents a 1-to-1 function.

- (a) Find $f^{-1}(x)$. (b) Show that $(f \circ f^{-1})(x) = x$.
 (c) Show that $(f^{-1} \circ f)(x) = x$. (d) Graph both f and f^{-1} on the coordinate plane provided.

1. $f(x) = 5x - 2$

2. $f(x) = 8 - x^2$ where $x \leq 0$

(a) $f^{-1}(x) =$

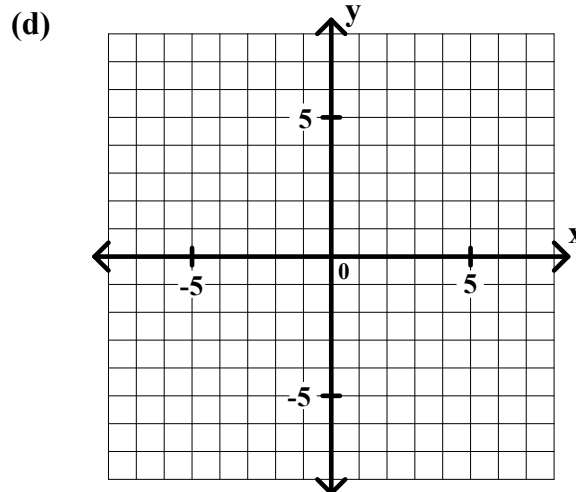
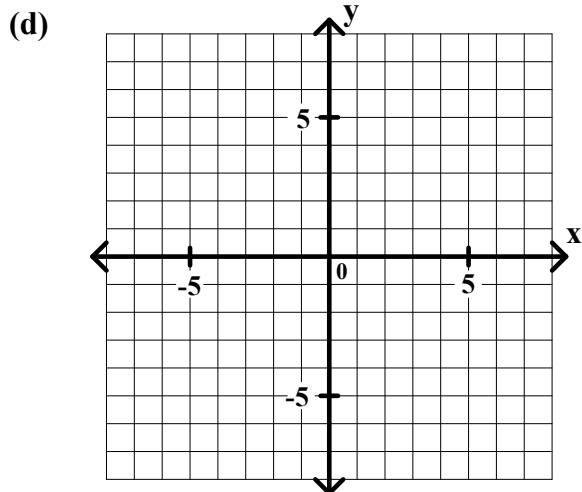
(a) $f^{-1}(x) =$

(b) $(f \circ f^{-1})(x) =$

(b) $(f \circ f^{-1})(x) =$

(c) $(f^{-1} \circ f)(x) =$

(c) $(f^{-1} \circ f)(x) =$



Precalculus Worksheet #4 Chapter 2 page 2

Each of the following represents a 1-to-1 function.

(a) Find $f^{-1}(x)$.

(b) Show that $(f \circ f^{-1})(x) = x$.

(c) Show that $(f^{-1} \circ f)(x) = x$.

(d) Graph both f and f^{-1} on the coordinate plane provided.

3. $f(x) = x^3 + 1$

(a) $f^{-1}(x) =$

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

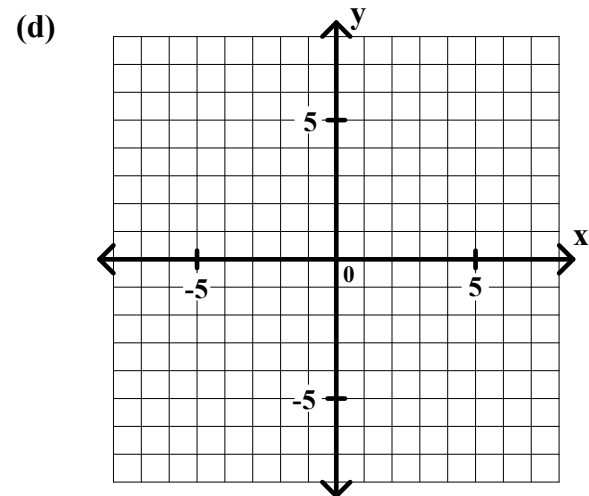
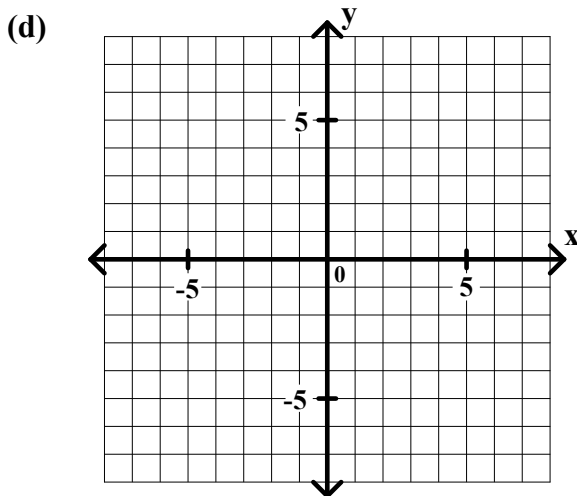
(a) $f^{-1}(x) =$

(b) $(f \circ f^{-1})(x) =$

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(c) $(f^{-1} \circ f)(x) =$

(c) $(f^{-1} \circ f)(x) =$



Precalculus Worksheet #4 Chapter 2 page 3

Find $f^{-1}(x)$ for each of the following 1-to-1 functions. Show your work neatly organized.

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

6. $f(x) = 3x$ $f^{-1}(x) =$

7. $f(x) = x - 1$ $f^{-1}(x) =$

8. $f(x) = -5x$ $f^{-1}(x) =$

9. $f(x) = 2x - 3$ $f^{-1}(x) =$

10. $f(x) = -3x + 5$ $f^{-1}(x) =$

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

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

13. $f(x) = x^3 + 5$ $f^{-1}(x) =$

14. $f(x) = 2x^3 - 1$ $f^{-1}(x) =$

Precalculus Worksheet #4 Chapter 2 page 4

Find $f^{-1}(x)$ for each of the following 1-to-1 functions. Show your work neatly organized.

15. $f(x) = x^2 + 1$; $x \geq 0$ $f^{-1}(x) =$

16. $f(x) = 12/x$ $f^{-1}(x) =$

For problems #17 and #18 show that $f(g(x)) = x$ and $g(f(x)) = x$.

17. $f(x) = 3x + 9$; $g(x) = \frac{x-9}{3}$

18. $f(x) = \sqrt[3]{x+2}$; $g(x) = x^3 - 2$

19. **What is the relationship between f and g in each of the two problems above?**

Precalculus Worksheet #4 Chapter 2 page 5

Solve each of the following problems. Show your process neatly organized.

- 20. y varies directly as x . If $y = 10$ when $x = 4$, then what is the value of y when $x = 5$?**
- 21. y is proportional to x . If $y = 12$ when $x = 8$, then what is the value of y when $x = 25$?**
- 22. y varies directly as the square of x . If $y = 4$ when $x = 6$, then what is the value of y when $x = 9$?**
- 23. y is proportional to the square root of x . If $y = 20$ when $x = 4$, then what is the value of y when $x = 25$?**
- 24. y varies jointly as x and z . If $y = 6$ when $x = 3$ and $z = 4$, then what is the value of y when $x = 6$ and $z = 12$?**
- 25. y varies inversely as x . If $y = 3$ when $x = 6$, then what is the value of y when $x = 2$?**
- 26. y is inversely proportional to x . If $y = 20$ when $x = 10$, then what is the value of y when $x = 8$?**
- 27. y varies directly as x and inversely as the square of z . If $y = 30$ when $x = 2$ and $z = 3$, then what is the value of y when $x = 1.5$ and $z = 6$?**

Precalculus Worksheet #4 Chapter 2 page 6

Solve each of the following problems. Show your work (your process) neatly organized.

28. The total cost of meat is proportional to the amount purchased. If 4 pounds cost \$9.56, then how much would 5.5 pounds cost?

29. The time required to travel between two places is inversely proportional to the average speed. If a hike took 6 hours when the average speed was 3.5 miles per hour, then how long would it have taken if the average speed had been 4.2 miles per hour?

30. In an open tank filled with liquid, the fluid pressure varies directly as the square of the depth. If the pressure is 3 pounds per square inch at a depth of 10 feet, then what would be the pressure at a depth of 15 feet?

31. The weight of an object is inversely proportional to the square of the distance between the object and the center of the earth. If an object normally weighs 150 pounds (on the surface of the earth), what would the object weigh if it was stationary at a point 200 miles above the surface of the earth? (The diameter of the earth is about 8000 miles.)