

Practice 7-7

Inverse Relations and Functions

Graph each relation and its inverse.

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

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

3. $y = 2x + 5$

4. $y = 4x^2$

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

6. $y = \frac{2}{3}x^2$

Find the inverse of each function. Is the inverse a function?

7. $y = x^2 + 2$

8. $y = x + 2$

9. $y = 3(x + 1)$

10. $y = -x^2 - 3$

11. $y = 2x - 1$

12. $y = 1 - 3x^2$

13. $y = 5x^2$

14. $y = (x + 3)^2$

15. $y = 6x^2 - 4$

16. $y = 3x^2 - 2$

17. $y = (x + 4)^2 - 4$

18. $y = -x^2 + 4$

For each function f , find f^{-1} and the domain and range of f and f^{-1} . Determine whether f^{-1} is a function.

19. $f(x) = \frac{1}{6}x$

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

21. $f(x) = x^2 - 2$

22. $f(x) = x^2 + 4$

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

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

Find the inverse of each relation. Graph the given relation and its inverse.

25.

x	-2	-1	0	1
y	-3	-2	-1	0

26.

x	0	1	2	3
y	-3	-1	0	-2

Let $f(x) = 2x + 5$. Find each value.

27. $(f^{-1} \circ f)(-1)$

28. $(f \circ f^{-1})(3)$

29. $(f \circ f^{-1})\left(-\frac{1}{2}\right)$

30. The equation $f(x) = 198,900x + 635,600$ can be used to model the number of utility trucks under 6000 pounds that are sold each year in the U.S. with $x = 0$ representing the year 1992. Find the inverse of the function. Use the inverse to estimate in which year the number of utility trucks under 6000 pounds sold in the U.S. will be 4,000,000.

Source: www.infoplease.com