

Chapter 5 Review

Find the indicated real nth root(s).

1. $\sqrt[3]{216}$

2. $\sqrt{25}$

3. $\sqrt[5]{-243}$

4. $\sqrt[4]{16}$

Evaluate the expression without using technology.

5. $49^{3/2}$

6. $125^{-2/3}$

Find the real solution(s) of the equation. Round your answer to two decimal places, if necessary.

7. $3x^2 = 75$

8. $(x + 3)^3 = 64$

Use the properties of rational exponents to simplify the expression.

9. $(4^3)^{2/3}$

10. $\frac{7^{1/3}}{7}$

11. $\left(\frac{6^3}{10^3}\right)^{-1/3}$

12. $(8^{-1} \cdot 8^{1/3})^{-1}$

13. $\sqrt{4} \cdot \sqrt{24}$

14. $\sqrt[4]{25} \cdot \sqrt[4]{25}$

15. $\frac{\sqrt[5]{64}}{\sqrt[5]{2}}$

16. $\frac{\sqrt{5}}{\sqrt{45}}$

17. $\frac{\sqrt[3]{3} \cdot \sqrt[3]{54}}{\sqrt[3]{9}}$

18. $\frac{2}{6-\sqrt{5}}$

19. $13(4^{2/7}) + 6(4^{2/7})$

20. $\sqrt[3]{\frac{3}{24}}$

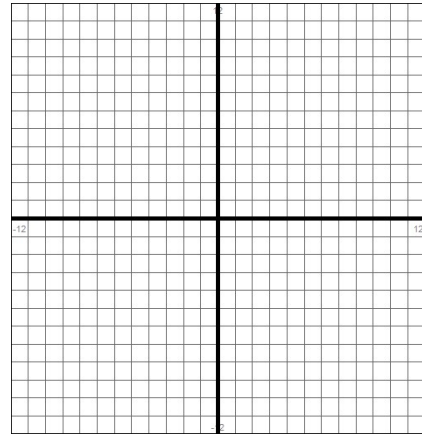
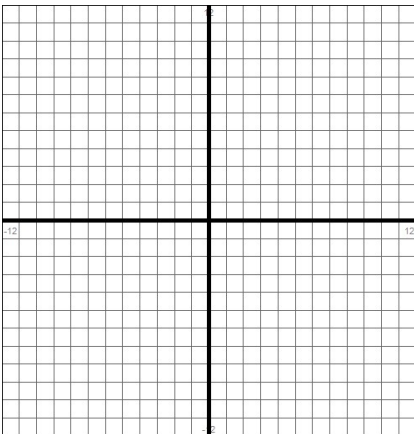
21. $\sqrt[3]{16x^2y^5z^9}$

22. $\sqrt[4]{16x^7y^3}$

Graph each function. Find the domain and range of each function.

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

24. $g(x) = -\sqrt[3]{x}$



Solve the equation and check your solution(s).

25. $\sqrt{x+1} = 4$

26. $\sqrt[3]{x-3} = -2$

27. $3\sqrt[4]{x-1} + 5 = 14$

28. $\sqrt[3]{3x+12} = \sqrt[3]{32-x}$

29. $x+3 = \sqrt{12x+1}$

30. $\sqrt{3x-2} = x-2$

31. $\sqrt{x+5} = 1 - \sqrt{x-2}$

32. $(x+1)^{\frac{3}{2}} = 8$

33. $(x+12)^{\frac{1}{2}} = x$

Find $(f+g)(x)$ and then evaluate $(f+g)(3)$.

34. $f(x) = \sqrt{3x}$ and $g(x) = -4\sqrt{3x}$

35. $f(x) = x^2 + 5x - 1$ and $g(x) = 2x^2 - x + 3$

Find $(f-g)(x)$ and then evaluate $(f-g)(-2)$.

36. $f(x) = 3\sqrt{x}$ and $g(x) = -7\sqrt{x}$

37. $f(x) = -x^2 + 3x$ and $g(x) = 4x^2 - 5x + 3$

Find $(fg)(x)$ and evaluate $(fg)(64)$.

38. $f(x) = 3x^2$ and $g(x) = x^{\frac{1}{2}}$

39. $f(x) = 2x^{\frac{2}{3}}$ and $g(x) = 5x^{\frac{1}{2}}$

Find $\left(\frac{f}{g}\right)(x)$.

40. $f(x) = 5x^4$ and $g(x) = 15x^{\frac{4}{3}}$

41. $f(x) = 12x^{\frac{3}{4}}$ and $g(x) = 3x^{\frac{2}{3}}$

If $f(x) = 2x^2 + 6x$ and $g(x) = x - 5$, find the indicated value.

42. $f(g(7))$

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

44. $g(g(-2))$

45. $f(f(-3))$

46. $f(x) = 5x + 6$, $g(x) = 3x - 2$. Find $f(g(x))$

47. $f(x) = 6x - 1$, $g(x) = -4x - 3$. Find $g(f(x))$

48. $f(x) = 2x^2$, $g(x) = x - 3$. Find $f(g(x))$

49. $f(x) = 3x + 7$, $g(x) = 2x - 1$. Find $f(f(x))$

50. $f(x) = 3x^{-1}$, $g(x) = 6x - 2$. Find $f(g(x))$

51. $f(x) = 4x - 16$, $g(x) = \sqrt{x + 9}$. Find $g(f(x))$

Find the inverse of each function.

52. $f(x) = 2x + 8$

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

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

55. $f(x) = 4x - 8$

Determine whether the functions are inverse functions.

56. $f(x) = \frac{x-6}{3}$, $g(x) = 3x + 6$

57. $f(x) = \sqrt{x - 4}$, $g(x) = x^2 + 4$