

Complete without a calculator! Show all work.

Approximate to the hundredths.

1. 5.21597

2. 7.3623

Simplify

3. $7 - 2 \cdot 5 + 4 \cdot 3 - 5$

4. $-2(5 + 3) + 7(3 - 2 \cdot 5)$

5. $-\frac{16}{(-2)(-4)}$

6. $-3(x - y) + 4(3x - 2y)$

Perform the indicated operation and simplify.

7. $\frac{x}{4} - \frac{x}{3}$

8. $\frac{y}{3} + \frac{y}{5} - \frac{y}{6}$

9. $\frac{12}{7} \cdot \frac{21}{4}$

10. $\frac{a^2}{b^3} \div \frac{2a}{b^2}$

Exponents and Radicals

Simplify using properties of exponents

11. $(-2z)^3$

12. $81^{1/4}$

13. $(-64)^{1/3}$

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

15. Express 0.00000215 in scientific notation.

16. Express 7.2×10^9 as a real number.

Simplify

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

18. $\sqrt{20}$

19. $(2 + \sqrt{5})(1 - \sqrt{5})$

20. $\frac{1}{2 - \sqrt{3}}$

Perform the indicated operation and write the results in standard form.

21. $(14z^2 + 2) + (3z - 4)$

22. $(27y^2 - 6y + 2) - (y^2 + 3y - 7)$

23. $5xy^2(3x-4y)$

24. $-2st^2(-t+s-2st)$

25. $(x-7)(x+9)$

26. $(2x+1)(3x-2)$

27. $(2x-3)^2$

28. $(5x-7)(5x+7)$

29. $(x^2+1)^2$

30. $(1-x^2)^2$

Factor out the common factor

31. $14x^2y^2-100xy^3$

32. $30x^4-20x^3+10x^2$

Factor the trinomial into a product of two binomials.

33. $2x^2+9x-5$

34. $6x^2-19x-7$

35. $16x^2-25$

36. $9x^2-30x+25$

Factor into a product of three polynomials.

37. $2x^3+4x^2-30x$

38. $6x^3-5x^2+x$

Factor into a product of two binomials by grouping.

39. x^3+x^2-2x-2

40. $2x^3-x^2+6x-3$

State the Domain of the Rational Expression.

41. $\frac{4x^2-3}{x^2-9}$

42. $\frac{1}{x^2+1}$

Simplify.

43. $\frac{x^2-4}{x-2}$

44. $\frac{x-5}{x-5}$

45. $\frac{t^2+t-6}{t^2-t-2}$

46. $\frac{z^3-z}{z^2+z}$

Perform the indicated operation and simplify.

$$47. \frac{x^2 + 3x - 10}{x^2 + 2x - 3} \cdot \frac{x^2 + x - 2}{x^2 + x - 6}$$

$$48. \frac{x^2 - x - 2}{x^3 + 3x^2} \div \frac{x + 1}{x^2 + 2x}$$

$$49. \frac{1}{x+1} - \frac{1}{x+3}$$

$$50. \frac{1}{x} - \frac{1}{x+1} + \frac{1}{x+2}$$

Solve the equation.

$$51. 3(z + 2) - 1 = 4z + 10$$

$$52. 6x + 6 = 8x + 3$$

$$53. \frac{1}{5}y - \frac{1}{3}y = -2$$

$$54. y^2 + 100 = 0$$

$$55. x^2 - 144 = 0$$

$$56. x^2 = 5x$$

$$57. x^2 - 6x + 8 = 0$$

$$58. y^3 - 4y = 0$$

$$59. x^3 - x^2 - 4x + 4 = 0$$

$$60. x^3 + x^2 + 3x + 3 = 0$$

Simplify.

$$61. \sqrt{-169}$$

$$62. \sqrt{-32}$$

$$63. i^{19}$$

$$64. i^9$$

$$65. (\sqrt{-4} + 2)(3 - \sqrt{-9})$$

$$66. (\sqrt{-36} + 1)(1 + \sqrt{-25})$$

$$67. \frac{1}{2-i}$$

$$68. \frac{1}{3+i}$$

$$69. \frac{6-5i}{3-2i}$$

$$70. \frac{7+2i}{4+5i}$$