

Simplify. Assume that no denominator is equal to zero.

- _____ 16. $(a^5b^5)(a^5b^3)$
 a. $a^{25}b^{15}$ c. $a^{10}b^{15}$
 b. $a^{25}b^8$ d. $a^{10}b^8$
- _____ 17. $(-6hi^2j^4)(3h^3ij^3)$
 a. $18h^4i^3j^7$ c. $18h^3i^2j^{12}$
 b. $-18h^4i^3j^7$ d. $-18h^3i^2j^{12}$
- _____ 18. $\frac{3^{10}}{3^7}$
 a. 3^{-3} c. 3^3
 b. 1^3 d. 3^7
- _____ 19. $\frac{(2a^5b)^2}{24b^6}$
 a. $\frac{a^{10}b^4}{6}$ c. $\frac{a^7}{6b^4}$
 b. $\frac{a^{10}}{12b^4}$ d. $\frac{a^{10}}{6b^4}$

Express the number in scientific notation.

- _____ 20. 0.0003054
 a. 30.54×10^{-5} c. 3.054×10^{-4}
 b. 0.3054×10^{-3} d. 305.4×10^{-6}
- _____ 21. 373×10^{-8}
 a. 3.73×10^{-6} c. 37.3×10^{-7}
 b. 0.373×10^{-5} d. 3.73×10^{-10}

Express the number in the statement in standard notation.

- _____ 22. In 2002, the United States Postal Service served 1.77×10^6 new delivery points.
 a. 177,000 c. 177,000,000
 b. 17,700,000 d. 1,770,000

Arrange the terms of the polynomial so that the powers of x are in descending order.

- _____ 23. $2xy^2 + x^2y^4 - 2x^3 + y^3$
 a. $y^3 + 2xy^2 + x^2y^4 - 2x^3$ c. $-2x^3 + y^3 + x^2y^4 + 2xy^2$
 b. $2x^3 + x^2y^4 + 2xy^2 + y^3$ d. $-2x^3 + x^2y^4 + 2xy^2 + y^3$

- _____ 24. $4x^2y^5 - 3xy^4 - 6y^2 + 2x^3$
- a. $-2x^3 + 4x^2y^5 - 3xy^4 - 6y^2$ c. $-6y^2 - 3xy^4 + 4x^2y^5 + 2x^3$
- b. $2x^3 + 4x^2y^5 - 6y^2 - 3xy^4$ d. $2x^3 + 4x^2y^5 - 3xy^4 - 6y^2$

Find the sum or difference.

- _____ 25. $(6a - 2b^2 - a) + (b - 3 + 9a^2)$
- a. $7a^2 + 5a + b - 3$ c. $9a^2 - 2b^2 + 5a + b - 3$
- b. $9a^2 - 2b^2 + 6a + b - 3$ d. $9a^2 - 2b^2 + 5a + b + 3$
- _____ 26. $(5a - 3a^2) - (-6a - 6)$
- a. $3a^2 + 11a + 6$ c. $-3a^2 + 11a + 6$
- b. $-3a^2 + 11a - 6$ d. $-3a^2 - 1a + 6$
- _____ 27. $(11p - 6q^2 - q) - (q^2 - 5p + 7p^2)$
- a. $7p^2 - 7q^2 + 16p - q$ c. $-7p^2 - 5q^2 + 16p - q$
- b. $-7p^2 - 7q^2 + 6p - q$ d. $-7p^2 - 7q^2 + 16p - q$

Solve the equation.

- _____ 28. $3(4x + 4) = 2(5x + 9) - 12$
- a. -9 c. $-\frac{7}{2}$
- b. $-\frac{3}{11}$ d. -3
- _____ 29. $q(q + 4) = 0$
- a. $\{0, -4\}$ c. $\{1, -4\}$
- b. $\{0, 4\}$ d. $\{0\}$
- _____ 30. $(r - 3)(r + 6) = 0$
- a. $\{-3, 6\}$ c. $\{3, -6\}$
- b. $\{0, 18\}$ d. $\{-3\}$
- _____ 31. $4k^2 = 5k$
- a. $\{0\}$ c. $\left\{1, \frac{4}{5}\right\}$
- b. $\left\{0, -\frac{5}{4}\right\}$ d. $\left\{0, \frac{5}{4}\right\}$

___ 32. $12x^2 - 14x + 4 = 0$

a. $\left\{\frac{2}{3}, \frac{1}{2}\right\}$

b. $\left\{2, \frac{6}{2}\right\}$

c. $\{-6, -8\}$

d. $\{6, 8\}$

___ 33. $8y^2 - 12y + 4 = y + 10$

a. $\{8, 2\}$

b. $\left\{-\frac{3}{8}, 2\right\}$

c. $\left\{\frac{3}{8}, 2\right\}$

d. $\{-16, 3\}$

Find the product.

___ 34. $-2s^2t^4(-6s^3t^5 - 6st^4 - 4t)$

a. $12s^6t^{20} + 12s^2t^{16} + 8s^2t^4$

b. $12s^5t^9 + 12s^3t^8 + 8s^2t^5$

c. $12s^5t^9 + 12s^3t^8 + 8t^5$

d. $-12s^5t^9 - 12s^3t^8 - 8s^2t^5$

___ 35. $(-6t - 4v)(-7t - 4v)$

a. $42t^2 + 16v^2$

b. $42t^2 + 52tv + 16v^2$

c. $-13t - 8v$

d. $42t^2 - 52tv + 16v^2$

___ 36. $(-6k + 4)(-7k^2 + 2k - 7)$

a. $-7k^2 - 4k - 3$

b. $42k^3 - 40k^2 + 50k - 28$

c. $-42k^3 - 40k^2 - 34k - 28$

d. $-7k^2 - 12k - 28$

___ 37. $(6g - 4h)^2$

a. $36g^2 - 16gh + 16h^2$

b. $36g^2 + 16h^2$

c. $36g^2 - 48gh - 16h^2$

d. $36g^2 - 48gh + 16h^2$

___ 38. $2\sqrt{5}(4\sqrt{2} + 11\sqrt{7})$

a. $6\sqrt{7} + 26\sqrt{3}$

b. $90\sqrt{5}$

c. $88\sqrt{70}$

d. $8\sqrt{10} + 22\sqrt{35}$

Name the set or sets of numbers to which the real number belongs.

___ 39. $\frac{-5}{6}$

a. irrational

b. whole, integers, rational

c. irrational, rational

d. rational

- _____ 40. $\sqrt{17}$
 a. rational, irrational
 b. irrational
 c. whole, irrational
 d. rational
- _____ 41. If the system is graphed, the solution to the system lies in which quadrant?
 $x = -9$
 $y = 4$
 a. I
 b. II
 c. III
 d. IV
- _____ 42. The sum of the digits of a two digit number is 14. If the digits are reversed, the new number is 18 less than the original number. If x = the tens digit, and y = the units digit, which system is true?
 a. $10x + y = 14$
 $10y + x = (10x + y) - 18$
 b. $x + y = 14$
 $y + x = (x + y) - 18$
 c. $x + y = 14$
 $10y + x = (10x + y) - 18$
 d. $(10y + x) - 18 = 10x + y$
 $x + y = 14$
- _____ 43. A coal barge on the Ohio River travels 24 miles upstream in 3 hours. The return trip takes the barge only 2 hours. Find the rate of the barge in still water.
 a. 2 mph
 b. 10 mph
 c. 16 mph
 d. none of these

Find the GCF of the set of monomials.

- _____ 44. $36s^5t^2, 120s^2t$
 a. $24s^2t$
 b. $12s^2t$
 c. $12s^2$
 d. $6s^2t$
- _____ 45. $39x^4y^3, 96xy^2, 114x^2y^3$
 a. $6x^2y$
 b. $3x^2y^2$
 c. $3xy^2$
 d. xy^2

Factor the polynomial.

- _____ 46. $16j^2k - 8j^6k^5 + 60j^3$
 a. $4j^2(4k - 2j^4k^5 + 15j)$
 b. $4(4j^2k - 2j^6k^5 + 15j^3)$
 c. $4j^2k(4 - 2j^4k^4 + 15j)$
 d. $2j^2(4k - 2j^4k^5 + 15j)$
- _____ 47. $3x^2 - 2x + 9xy - 6y$
 a. $(3x + y)(3x - 2)$
 b. $(x + 3y)(3x - 2)$
 c. $(x - 3y)(3x + 2)$
 d. $(3x + 3y)(x - 2)$