

■ Which of the following are not polynomials? See Example 3.

9. a. $1 - 4x^2y$

b. $3x^2 - 4x + \frac{2}{x}$

c. $2\sqrt{x} - 7x^3 + 2$

d. $\sqrt{2}x^3 + \frac{3}{4}x^2 - x$

10. a. $\sqrt{3}x^2 - 7x + 2$

b. $2x^{4/3} + 6x^{1/3} - 2$

c. $\frac{2}{x^2 - 6x + 5}$

d. $\frac{1}{4}x^{-2} + 3x^{-1} + 4$

■ Simplify each expression by combining like terms. See Example 4.

11. $3x^2 + 4x^2$

12. $7x^3 - 3x^3$

13. $-6y^3 + 3y^3$

14. $-5y^2 - 6y^2$

15. $8z^2 - 8z^2 + z^2$

16. $-6z^3 + 6z^2 - z^2$

17. $3x^2y + 4x^2y - 2x$

18. $6xy^2 - 4xy^2 + 3y$

19. $3r^2 + (3r^2 + 4r)$

20. $r^2 + (2r^2 + r)$

21. $(s^2 - s) - 3s$

22. $(s^2 + s) - 3s^2$

■ Simplify each expression. See Examples 5 and 6.

23. $(2t^2 + 3t - 1) - (t^2 + 1)$

24. $(t^2 - 4t + 1) - (2t^2 - 2)$

25. $(u^2 - 3u - 2) - (3u^2 - 2u + 1)$

26. $(2u^2 + 4u + 2) - (u^2 - 4u - 1)$

27. $(2x^2 - 3x + 5) - (3x^3 + x - 2)$

28. $(4y^4 - 3y^2 - 7) - (6y^2 - y + 2)$

29. $(4t - 3t^2 + 2t^4 - 1) - (5t^3 - 2 + t + t^2)$

30. $(4s^3 - 3s + 2s^2 - 1) - (2s + s^3 - s^2 - 1)$

■ Use a vertical format to perform the indicated operations. See Example 7.

31. $(4a^2 + 6a - 7) - (a^2 + 5a + 2)$

32. $(7c^2 - 10c + 8) - (-6c^2 - 3c - 2)$

33. $(4x^3y - 3xy + xy^2) - (-5x^2y + xy - 2xy^2) - (x^2y - 3xy)$

34. $(m^2n^2 - 2mn + 7) - (-2m^2n^2 + mn - 3) - (3m^2n^2 - 4mn + 2)$

■ Perform the indicated operations. See Examples 5, 6, and 7.

35. Subtract $4x^2 - 3x + 2$ from the sum of $x^2 - 2x + 3$ and $x^2 - 4$.

36. Subtract $2t^2 + 3t - 1$ from the sum of $2t^2 - 3t + 5$ and $t^2 + t + 2$.

37. Subtract the sum of $2b^2 - 3b + 2$ and $b^2 + b - 5$ from $4b^2 + b - 2$.

38. Subtract the sum of $7c^2 + 3c - 2$ and $3 - c - 5c^2$ from $2c^2 + 3c + 1$.

■ Simplify. See Example 8.

39. $y - [2y + (y + 1)]$

40. $3x + [2x - (x + 4)]$

41. $3 - [2x - (x + 1) + 2]$

42. $5 - [3y + (y - 4) - 1]$

43. $(3x + 2) - [x + (2 + x) + 1]$

44. $-(x - 3) + [2x - (3 + x) - 2]$

45. $[x^2 - (2x + 3)] - [2x^2 + (x - 2)]$

46. $[2y^2 - (4 - y)] + [y^2 - (2 + y)]$

47. $[2x^2 - 2x - (x^2 - 3x + 7)] - [4x^2 - (x^2 + 3)]$

48. $-(x^2 + 3x) - [3x^2 - (6x - x^2 + 2)]$

49. $3y - (2x - y) - (y - [2x - (y - 2x)] + 3y)$