

b. Expand the expressions found in (a):

$$\begin{aligned} 2000(1+r)^2 &= 2000(1+2r+r^2) \\ &= 2000 + 4000r + 2000r^2 \end{aligned}$$

and

$$\begin{aligned} 2000(1+r)^3 &= 2000(1+r)(1+2r+r^2) \\ &= 2000(1+3r+3r^2+r^3) \\ &= 2000 + 6000r + 6000r^2 + 2000r^3. \end{aligned}$$

EXERCISE 1.5

A

■ Write each expression as a polynomial and simplify. See Example 1.

- | | | |
|------------------------|-------------------------|-------------------------|
| 1. $(x+3)^2$ | 2. $(y-4)^2$ | 3. $(2y-5)^2$ |
| 4. $(3x+2)^2$ | 5. $(x+3)(x-3)$ | 6. $(x-7)(x+7)$ |
| 7. $(3t-4s)(3t+4s)$ | 8. $(2x+a)(2x-a)$ | 9. $(5a-2b)^2$ |
| 10. $(4u+5v)^2$ | 11. $(8xz+3)^2$ | 12. $(7yz-2)^2$ |
| 13. $2[4x+(x+1)^2]$ | 14. $3[2x+(x+2)^2]$ | 15. $-x+2x[4-(x-3)^2]$ |
| 16. $-2x+x[3-(x+4)^2]$ | 17. $-2x[x+(2x-1)^2-4]$ | 18. $-x[2x-(2x+1)^2+3]$ |

■ Factor completely. See Examples 2 and 3.

- | | | |
|----------------------------|--------------------------|---------------------------|
| 19. $x^2 - 25$ | 20. $x^2 - 36$ | 21. $x^2 - 24x + 144$ |
| 22. $x^2 + 26x + 169$ | 23. $x^2 - 4y^2$ | 24. $9x^2 - y^2$ |
| 25. $4x^2 + 12x + 9$ | 26. $4y^2 + 4y + 1$ | 27. $9u^2 - 30uv + 25v^2$ |
| 28. $16s^2 - 56st + 49t^2$ | 29. $4a^2 - 25b^2$ | 30. $16a^2 - 9b^2$ |
| 31. $x^2y^2 - 81$ | 32. $x^2y^2 - 64$ | |
| 33. $9x^2y^2 + 6xy + 1$ | 34. $4x^2y^2 + 12xy + 9$ | |
| 35. $16x^2y^2 - 1$ | 36. $64x^2y^2 - 1$ | |
| 37. $(x+2)^2 - y^2$ | 38. $x^2 - (y-3)^2$ | |

■ See Example 4.

- | | | |
|--------------------------|----------------------------|----------------------------|
| 39. $x^2 + 2x + 1 - y^2$ | 40. $x^2 - 6x + 9 - y^2$ | 41. $y^2 - x^2 + 2x - 1$ |
| 42. $y^2 - x^2 + 4x - 4$ | 43. $4x^2 + 4x + 1 - 4y^2$ | 44. $9x^2 - 6x + 1 - 9y^2$ |