R.3 Exercises *(pages 28–31)*

1. $-16x^7$ **3.** n^{11} **5.** 9^8 **7.** $72m^{11}$ **9.** $-15x^5y^5$
11. 2^{10} **13.** $(-6)^3x^6$, or $-216x^6$ **15.** -4^2m^6, or $-16m^6$
17. $\frac{r^{24}}{s^6}$ **19.** $\frac{(-4)^4m^8}{t^4p^8}$, or $\frac{256m^8}{t^4p^8}$ **21.** -1 **23.** **(a)** B **(b)** C **(c)** B **(d)** C **27.** polynomial; degree 11; monomial
29. polynomial; degree 4; binomial **31.** polynomial; degree 5; trinomial **33.** polynomial; degree 11; none of these **35.** not a polynomial **37.** polynomial; degree 0; monomial **39.** $x^2 - x + 2$ **41.** $12y^2 + 4$
43. $6m^4 - 2m^3 - 7m^2 - 4m$ **45.** $28r^2 + r - 2$
47. $15x^4 - \frac{7}{3}x^3 - \frac{2}{9}x^2$ **49.** $12x^5 + 8x^4 - 20x^3 + 4x^2$
51. $-2z^3 + 7z^2 - 11z + 4$
53. $m^2 + mn - 2n^2 - 2km + 5kn - 3k^2$
55. $16x^4 - 72x^2 + 81$ **57.** $x^4 - 2x^2 + 1$
59. $4m^2 - 9$ **61.** $16x^4 - 25y^2$ **63.** $16m^2 + 16mn + 4n^2$
65. $25r^2 - 30rt^2 + 9t^4$
67. $4p^2 - 12p + 9 + 4pq - 6q + q^2$
69. $9q^2 + 30q + 25 - p^2$
71. $9a^2 + 6ab + b^2 - 6a - 2b + 1$
73. $y^3 + 6y^2 + 12y + 8$ **75.** $q^4 - 8q^3 + 24q^2 - 32q + 16$
77. $p^3 - 7p^2 - p - 7$ **79.** $49m^2 - 4n^2$
81. $-14q^2 + 11q - 14$ **83.** $4p^2 - 16$
85. $11y^3 - 18y^2 + 4y$ **87.** $2x^5 + 7x^4 - 5x^2 + 7$
89. $4x^2 + 5x + 10 + \frac{21}{x-2}$ **91.** $2m^2 + m - 2 + \frac{6}{3m+2}$
93. $x^2 + 2 + \frac{5x+21}{x^2+3}$ **95.** 9999 **96.** 3591 **97.** 10,404
98. 5041 **99.** **(a)** $(x + y)^2$ **(b)** $x^2 + 2xy + y^2$
(d) the special product for squaring a binomial

101. **(a)** approximately 60,501,000 ft^3 **(b)** The shape becomes a rectangular box with a square base, with volume $V = b^2h$. **(c)** If we let $a = b$, then $V = \frac{1}{3}h(a^2 + ab + b^2)$ becomes $V = \frac{1}{3}h(b^2 + bb + b^2)$, which simplifies to $V = hb^2$. Yes, the Egyptian formula gives the same result.
103. 6.3; exact **105.** 2.1; 0.3 low **107.** 1,000,000
109. 32