

In Exercises 97–128, completely factor the expression.

97.  $x^3 - 9x$

98.  $12x^2 - 48$

99.  $x^3 - 4x^2$

100.  $6x^2 - 54$

101.  $x^2 - 2x + 1$

102.  $16 + 6x - x^2$

103.  $1 - 4x + 4x^2$

104.  $-9x^2 + 6x - 1$

105.  $2x^2 + 4x - 2x^3$

106.  $2y^3 - 7y^2 - 15y$

107.  $9x^2 + 10x + 1$

108.  $13x + 6 + 5x^2$

109.  $3x^3 + x^2 + 15x + 5$

110.  $5 - x + 5x^2 - x^3$

111.  $x^4 - 4x^3 + x^2 - 4x$

112.  $3u - 2u^2 + 6 - u^3$

113.  $25 - (z + 5)^2$

114.  $(t - 1)^2 - 49$

115.  $(x^2 + 1)^2 - 4x^2$

116.  $(x^2 + 8)^2 - 36x^2$

117.  $2t^3 - 16$

118.  $5x^3 + 40$

119.  $4x(2x - 1) + (2x - 1)^2$

120.  $5(3 - 4x)^2 - 8(3 - 4x)(5x - 1)$

121.  $2(x + 1)(x - 3)^2 - 3(x + 1)^2(x - 3)$

122.  $7(3x + 2)^2(1 - x)^2 + (3x + 2)(1 - x)^3$

123.  $7x(2)(x^2 + 1)(2x) - (x^2 + 1)^2(7)$

124.  $3(x - 2)^2(x + 1)^4 + (x - 2)^3(4)(x + 1)^3$

125.  $2x(x - 5)^4 - x^2(4)(x - 5)^3$

126.  $5(x^6 + 1)^4(6x^5)(3x + 2)^3 + 3(3x + 2)^2(3)(x^6 + 1)^5$

127.  $\frac{x^2}{2}(x^2 + 1)^4 - (x^2 + 1)^5$

128.  $5w^3(9w + 1)^4(9) + (2w + 1)^5(3w^2)$

**Geometric Modeling** In Exercises 129–132, match the “geometric factoring model” with the correct factoring formula. [The models are labeled (a), (b), (c), and (d).]

129.  $a^2 - b^2 = (a + b)(a - b)$

130.  $a^2 + 2ab + b^2 = (a + b)^2$

131.  $a^2 + 2a + 1 = (a + 1)^2$

132.  $ab + a + b + 1 = (a + 1)(b + 1)$

