

## Section 3.3 Extra Practice

1. What is the corresponding binomial factor of a polynomial  $P(x)$  given the value of the zero?
  - a)  $P(6) = 0$
  - b)  $P(-7) = 0$
  - c)  $P(2) = 0$
  - d)  $P(-5) = 0$
2. Determine whether  $x - 1$  is a factor of each polynomial.
  - a)  $-4x^4 - 3x^3 + 2x^2 - x + 5$
  - b)  $7x^5 + 5x^4 + 23x^2 + 8$
  - c)  $2x^4 - 3x^3 - 5x^2 + 6x - 1$
  - d)  $2x^3 + 5x^2 - 7$
3. State whether each polynomial has  $x + 2$  as a factor.
  - a)  $-3x^3 + 2x^2 + 10x + 5$
  - b)  $5x^2 + 6x - 8$
  - c)  $2x^4 - 3x^3 - 5x^2$
  - d)  $3x^3 - 12x - 2$
4. What are the possible integral zeros of each polynomial?
  - a)  $P(n) = n^3 - 2n^2 - 5n + 12$
  - b)  $P(p) = p^4 - 3p^3 - p^2 + 7p - 6$
  - c)  $P(z) = z^4 + 4z^3 + 3z^2 + 8z - 25$
  - d)  $P(y) = y^4 - 11y^3 - 2y^2 + 2y + 10$
5. The factors of a polynomial are  $x + 3$ ,  $x - 4$ , and  $x + 1$ . Describe how the zeros of the polynomial expression could be used to determine the zeros of the corresponding function.
6. Factor completely.
  - a)  $x^3 + 2x^2 - 13x + 10$
  - b)  $x^4 - 7x^3 + 3x^2 + 63x - 108$
  - c)  $x^3 - x^2 - 26x - 24$
  - d)  $x^4 - 26x^2 + 25$
7. Factor completely.
  - a)  $x^3 + x^2 - 16x - 16$
  - b)  $x^3 - 2x^2 - 6x - 8$
  - c)  $k^3 + 6k^2 - 7k - 60$
  - d)  $x^3 - 27x + 10$
8. Factor completely.
  - a)  $x^4 + 4x^3 - 7x^2 - 34x - 24$
  - b)  $x^5 + 3x^4 - 5x^3 - 15x^2 + 4x + 12$
9. Determine the value(s) of  $k$  so that the binomial is a factor of the polynomial.
  - a)  $x^2 - 8x - 20$ ,  $x + k$
  - b)  $x^2 - 3x - k$ ,  $x - 7$
10. Each polynomial has a factor of  $x - 3$ . What is the value of  $k$  in each case?
  - a)  $kx^3 - 10x^2 + 2x + 3$
  - b)  $4x^4 - 3x^3 - 2x^2 + kx - 9$

