

**Practice C**  
**Factoring Polynomials**

Use the Factor Theorem to verify that each linear binomial is a factor of the given polynomial. Then use synthetic division to write the polynomial as a product.

1.  $(x + 5)$   $P(x) = 2x^2 + 5x + 25$

2.  $(x - 7)$   $P(x) = x^2 + 5x^2 + 5x^2 + 5$

3.  $(x - 2)$   $P(x) = 3x^2 + 10x^2 + 15x + 10$

4.  $(x - 3)$   $P(x) = x^2 + 5x^2 + 4x^2 + 30x + 9$

Factor each expression.

5.  $15x^2 + 10x^2 + 25x + 15$

6.  $3x^2 + 54x^2 + 216x^2$

7.  $x^2 + 15x^2 + 25x^2$

8.  $5x^2 + 15x^2 + 4x + 5$

9.  $255x^2 + 15x$

10.  $-3x^2 + 25x^2$

**Notes:**

11. The voltage generated by an electrical circuit changes over time according to the polynomial  $V(t) = t^2 + 4t^2 + (2t + 10)$ , where  $t$  is in volts and  $t$  is in seconds. Factor the polynomial to find the times when the voltage is equal to zero.