

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. $(x - 3)$ $P(x) = x^2 - 15x^2 - 4x^2 + 33x - 9$

Factor each expression.

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

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 $V(t) = t^2 + 4t^2 - (2t^2 + 10t)$, where t is in units seconds. Factor the polynomial to find the times when the voltage is equal to zero.