Name _____ Date _____ Class _____

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. $(x + 5)$; $P(x) = 2x^2 + 6x + 20$

2. $(x - 1)$; $P(x) = x^3 + 6x^2 + 6x^2 + 1$

3. $(x + 2)$; $P(x) = 5x^3 + 10x^2 + 17x + 10$

4. $(x - 6)$; $P(x) = x^3 - 8x^2 - 4x^2 + 32x - 6$

Factor each expression.

5. $15x^3 - 10x^2 + 20x - 15$

6. $3x^3 + 6x^2 + 24x^2$

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

8. $6x^3 + 12x^2 + 4x + 8$

9. $250x^3 + 5x$

10. $-2x^3 + 24x^2$

Solve.

11. The voltage generated by an electrical circuit changes over time according to the polynomial $V(t) = t^3 - 4t^2 - 23t + 100$, where V is in volts and t is in seconds. Factor the polynomial to find the times when the voltage is equal to zero.