Name: _____

Date: _____ Per: _____

** This is a 2-page document! **

Directions: Use the Remainder Theorem (Synthetic Substitution) to evaluate $f(x)$ at c.

1. $f(x) = 4x^3 + 10x^2 - 15x - 21$; $c = 2$	2. $f(x) = 2x^4 - 4x^3 + 5x^2 - 9x$; $c = -1$
3. $f(x) = 2x^4 + 6x^3 - 2x^2 - x - 14$; $c = -3$	4. $f(x) = 3x^4 - 9x^3 - 24x - 48$; $c = 4$

Directions: Use the Factor Theorem to determine which binomials are factors of the given function. Check all that apply.

5. $f(x) = 3x^3 + 13x^2 - 32x - 12$

☐ $(x + 6)$

☐ $(x - 2)$

☐ $(x + 4)$

6. $f(x) = 4x^4 + 52x^3 + 87x^2 - 13x - 22$

☐ $(x - 1)$

☐ $(x + 11)$

☐ $(x + 2)$

Directions: Use the Factor Theorem and the given binomial to completely factor the polynomial function. Then, give the zeros.

7. $f(x) = x^3 + 6x^2 - 16x - 96;\ (x-4)$

8. $f(x) = 2x^3 + 13x^2 - 15x - 126;\ (x+6)$

9. $f(x) = 16x^4 - 48x^3 - 9x^2 + 27x;\ (x-3)$

10. $f(x) = x^5 + 4x^4 - 26x^3 - 104x^2 + 25x + 100;\ (x+4)$

* BONUS *

11. The value of a rare baseball card issued in 1989 is represented by the function
$f(x) = 0.2x^3 - .25x^2 + 3x + 4$, where x represents the number of years since the baseball card was issued. Use the Remainder Theorem to find the value of the card in 1999.

USE THE REMAINDER TH'M. TO EVALUATE f(x) at C.

* use synthetic substitution *

5. $f(x) = x^4 + 5x^3 - 19x^2 - 23x$; $c = -5$

6. $f(x) = 2x^4 + 4x^3 + 2x - 1$; $c = -2$

6. $f(x) = 8x^3 - 5x^2 - 1$; $c = 7$

8. $f(x) = -2x^5 + 7x^4 + 2x^3 - x + 8$; $c = 4$

APPLICATIONS

9. $f(x) = 3x^5 + 2x^4 + 4x^3 + 3x^2 + 2x - 3$; $c = 1$

10. The distance, in feet, that a person travels on a snowboard is modeled by the equation $d(t) = 0.6t^2 + 10t$, where t is the time in seconds. Use the Remainder Theorem to find the distance traveled after one minute.