ALGEBRA II
SECTION 6-3

REMAINDER AND FACTOR THEOREMS

Review f(#) from section 6-4. Too easy! So, try a tough one without the calculator.

Find f(2) for: $x^7 - x^6 + x^5 + x^4 - x^3 + x^2 - x +$

This problem will vary from class to class

Use synthetic "SUBSTITUTION" to find g(3) and g(-5) for each of the following functions.

1) $g(x) = 2x^4 + x^3 - 28x^2 + 10x + 100$

3	2	1	-28	10	100
		6	21	-21	-33
	2	7	-7	-11	67

Answer: 67

2) $g(x) = x^5 - 14x^3 + 40x^2 + 1$

-5	1	0	-14	40	0	1
		-5	25	-55	75	-375
	1	-5	11	-15	75	-374

Answer: -374

Determine if the binomial given is a factor of the polynomial given.

1) $x^3 + 6x^2 - x - 30$; $x + 3$

-3	1	6	-1	-30
		-3	-9	30
	1	3	-10	0

yes, Remainder = 0

2) $3x^4 + 2x^2 + 8x + 4$; $x + 1$

-1	3	0	2	8	4
		-3	3	-5	-3
	3	-3	5	3	1

no, Remainder ≠ 0

Given a polynomial and one of its ***factors***, find the remaining ***factors*** of the polynomial.

1) $x^3 - 7x^2 + 4x + 12$; $x - 2$

2	1	-7	4	12
		2	-10	-12
	1	-5	-6	0

$1x^2 - 5x - 6$
$(x - 6)(x + 1)$

put x's back into problem factor!

2) $6x^3 - x^2 - 109x - 36$; $x + 4$

-4	6	-1	-109	-36
		-24	100	36
	6	-25	-9	0

$6x^2 - 25x - 9$
$(3x + 1)(2x - 9)$

Remainder for these must be 0 otherwise you did something wrong