ALGEBRA II
HOMEWORK #1-3
FACTORING BY GROUPING

Factor each of the following completely.

1) $6x^2 + x - 35$

210

$15 \quad -14$ (210, 1)

$6x^2 + 15x - 14x - 35$

$3x(2x+5) - 7(2x+5)$

$(2x+5)(3x-7)$

2) $x^4 - 9x^2 + 20$ ← DOTS

$-5 \quad -4$ (20, −9)

$(x^2-5)(x^2-4)$

$(x^2-5)(x+4)(x-4)$

3) $\frac{1}{9}x^2 - y^2$ Dots

$\left(\frac{1}{3}x + y\right)\left(\frac{1}{3}x - y\right)$

4) $a^3 + 2a^2 - 25ab^2 - 50b^2$ Grouping

$a^2(a+2) - 25b^2(a+2)$

$(a+2)(a^2 - 25b^2)$ ← DOTS

$(a+2)(a+5b)(a-5b)$

5) $x^3 + 6x^2 + 5x + 30$

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

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

6) $x^4 - 7x^2 - 30$

$3 \quad -10$ (−30, −7)

$(x^2+3)(x^2-10)$

7) $x^2(x-3)-100(x-3)$

$(x-3)(x^2-100)$

$(x-3)(x+10)(x-10)$

8) x^8-16 DOTS

$(x^4+4)(x^4-4)$ DOTS AGAIN

$(x^4+4)(x^2+2)(x^2-2)$

9) $3x^4-16x^2-12$

-36

$3x^4+2x^2-18x^2-12$

$x^2(3x^2+2)-6(3x^2+2)$

$(3x^2+2)(x^2-6)$

-36, 2, -18, -16

OR...

The order you write the -18 and $+2$ does not matter!

$3x^4-18x^2+2x^2-12$

$3x^2(x^2-6)+2(x^2-6)$

$(x^2-6)(3x^2+2)$

10) Multiply and express your answer as a polynomial in standard form: $(x^2-3x+1)(x-4)$

$(x-4)(x^2-3x+1)$

$x^3-3x^2+x-4x^2+12x-4$

$x^3-7x^2+13x-4$

	x^2	$-3x$	$+1$
x	x^3	$-3x^2$	$+x$
-4	$-4x^2$	$+12x$	-4

$x^3-7x^2+13x-4$