UNIT 2 WORKSHEET 8
FACTORING POLYNOMIALS

Factor each of the following polynomials.

A) $x^2 - 3x - 28$

B) $x^2 - 5x + 6$

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

D) $x^2 + 8x + 16$

E) $x^2 + 9x - 22$

F) $x^2 - 25$

G) $x^2 - 9$

H) $2x^2 + 7x + 6$

I) $2x^2 + 13x + 21$

J) $3x^2 - 10x + 8$

K) $2x^2 - 3x - 35$

L) $5x^{2n} + 13x^n + 6$

Factoring Formulas

Complete each of the following formulas.

$a^2 + 2ab + b^2 =$

$a^2 - 2ab + b^2 =$

$a^2 - b^2 =$

$a^3 + b^3 =$

$a^3 - b^3 =$

Factor each of the following using the factoring formulas.

A) $x^2 - 36$

B) $9x^2 - 36$

C) $x^2 + 12x + 36$

D) $x^2 - 10x + 25$

E) $x^2 + x + \frac{1}{4}$

F) $25x^2 - 10x + 1$

G) $x^3 + 125$

H) $x^3 - 27$

I) $2x^3 + 54$

Factoring by Grouping

Factoring by grouping is commonly used when there are more than three terms in the polynomial. It is possible to group more than once in any given problem. Also, be aware that the terms do not necessarily need to be grouped evenly. This means a polynomial with 4 terms could be grouped with the first 3 terms, then the last. Pay attention to the coefficients in the polynomials. Look for patterns. There are clues telling you grouping must be used.

Factor each of the following polynomials by grouping

A) $x^3 - x^2 + 2x - 2$

B) $x^3 + 5x^2 - 5x - 25$

C) $x^2 - ax + cx - ac$

D) $5x^3 - 10x^2 + 3x - 6$

E) $x^3 - 4x^2 + 6x - 24$

F) $x^2 + 2xy + y^2 - z^2$

G) $10x^3 + 8x^2 + 15xy + 12y$

H) $2x^3 - 10x^2 + 4x - 20$

I) $3x^2 + xy - 3xz - yz$

Factoring Complex Polynomials

The following questions were designed to give you a hard time ☺! You will need to use all of your knowledge on factoring for the following questions. Remember to always look at the problem to make sure there is nothing else you can do. Pay particular attention to any factor that is greater than a first degree polynomial.

Factor each of the following polynomials

A) $x^2 - y^2 + 2yz - z^2$

B) $3x^4 - 243$

C) $2x^3 - 16$

D) $2x^4 - 58x^2 + 200$

E) $x^5 - 4x^3 - x^2 + 4$

F) $x^6 - 64$

G) $6x^2 + 2xy - 3xz - yz$

H) $x^2 - z^2 + y^2 - 2xy$

I) $16x^2 - y^2 - 2yz - z^2$