6-7 Factoring: A General Strategy

Factoring Polynomials

A. Always look first for a GCF.

B. Then look at the number of terms:
- Two Terms: Determine if you have a difference of Squares
- Three Terms: Determine if it could be factored farther, in $x^2 + bx + c$ or $ax^2 + bx + c$ form.
- Four Terms: Try factoring by grouping

C. Always factor completely.

Factor.

$\frac{14a^4}{14a^2} - \frac{14a^2}{14a^2}$ GCF: $14a^2$

$14a^2(a^2 - 1)$
$14a^2(a + 1)(a - 1)$

$x^8 - 1$

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

$\frac{3x^4}{3x^2} + \frac{30x^3}{3x^2} + \frac{75x^2}{3x^2}$ GCF: $3x^2$

$3x^2(x^2 + 10x + 25)$
$3x^2(x + 5)(x + 5)$

$\frac{2a^4}{2a^2} + \frac{14a^3}{2a^2} + \frac{24a^2}{2a^2}$ GCF: $2a^2$

$2a^2(a^2 + 7a + 12)$
$2a^2(a + 3)(a + 4)$