

Factoring Practice

GENERAL FACTORING STRATEGY

1. Factor out the greatest common factor if present.
2. Count the number of terms of the remaining factor. Look for special cases.
 - A. Two terms [remember sum of two squares $a^2 + b^2$ is prime]
 - i. Difference of two squares $a^2 - b^2$ $(a + b)(a - b)$
 - ii. Difference of two cubes $a^3 - b^3$ $(a - b)(a^2 + ab + b^2)$
 - iii. Sum of two cubes $a^3 + b^3$ $(a + b)(a^2 - ab + b^2)$
 - B. Three terms – Is it a perfect square or not?
 - i. Perfect square trinomial, positive 2nd term: $a^2 + 2ab + b^2$ $(a + b)(a + b) = (a + b)^2$
 - ii. Perfect square trinomial, negative 2nd term: $a^2 - 2ab + b^2$ $(a - b)(a - b) = (a - b)^2$
 - iii. General trinomial, leading coefficient other than 1: $ax^2 + bx + c$ $ax^2 + mx + nx + c$ then group
 - iv. General trinomial, leading coefficient of 1: $x^2 + bx + c$ $(x+m)(x+n)$
 - v. With a polynomial of high degree, use substitution to form a polynomial of degree 2 or 3, or use trial and error.
 - C. Four terms – check to see if one can factor by grouping.
3. Check to see if any of the factors can be further factored.

Which approach do you like? Try your favorite approach on some of the following.
Don't forget the important first step removing the GCF!

TRY:

$$3y^2 + 20y + 12$$

$$2y^2 - 17y + 21$$

$$x^3 - 6x^2 + 9x$$

$$3x^2 + 6x + 3$$

$$x^2 + 3x - 28$$