

* COPY FOR NOTES *

BE-1B MONDAY 1-14-08

WE HAVE SPENT A LOT OF TIME
FACTORING POLYNOMIALS. The factoring

↑
(MONOMIALS SEPARATED BY
+ OR -)

TECHNIQUES WE HAVE USED ARE
GCF, FBG, AND WE HAVE USED A
TRICK (THE MAGIC NUMBER TECHNIQUE)
TO FACTOR A TRINOMIAL BY FIRST
TURNING IT INTO A 4-TERM POLYNOMIAL
SO WE COULD USE FBG.

Factoring polynomials + ZPP allows us
to solve polynomial equations.

GCF = Greatest Common Factor
FBG = Factor By Grouping

ZPP = Zero
product
property

A weakness of the "magic number" technique to factor ax^2+bx+c is that not all polynomials can be factored.

As a matter of fact, most polynomials cannot be factored, they are prime polynomials.

I told you I would not give you any trinomials to factor that were prime until I showed you a way to check if they were or were not prime, here is the check:

In ax^2+bx+c

it, and only it, b^2-4ac is a perfect square

the trinomial can be factored, that is, you can use the magic number technique.

3.
Ex) CAN $x^2 - 7x + 10$ be factored?

$$a = 1 \quad b^2 - 4ac$$

$$b = -7 \quad ()^2 - 4()()$$

$$c = 10 \quad (-7)^2 - 4(1)(10)$$

$$49 - 40$$

$$9$$

↑

Yes, since 9 is a perfect square ($\sqrt{9} = 3$), the trinomial can be factored.

$b^2 - 4ac$ is called the discriminant of the trinomial
