Class # 11 - Fri Sept. 24

Last time: outlined AC-method

(for factoring quadratic polynomials

$ax^2 + bx + c$).

Today: AC-Method examples (from WW).

- Difference of squares (Ex: $x^2 - 9 = \ldots$)
- Solving quadratic equations
  - by factoring + using the "Zero Product Property"

WW : AC-Method

split up $11x$ using 2 factors of $c=24$ which sum to 11

#1) $x^2 + 11x + 24 = \underbrace{(x^2 + 8x)}_{\text{GCF: } x} + \underbrace{(3x + 24)}_{\text{GCF: } 3}$

quadratic term

linear term

constant term

factor out $(x+8)$

$$= x(x+8) + 3(x+8)$$

$$= \boxed{(x+8)(x+3)}$$

#2) $1x^2 - 2x - 35 = (x^2 - 7x + 5x - 35)$

(two factors of 35 which differ by 2)

$\underbrace{}_{5,\,7}$

$$= x(x-7) + 5(x-7)$$

$$= (x+5)(x-7)$$

($\Rightarrow$ 2 factors of $c=-35$ which sum to $b=-2$)

Next topic/WW: "Difference of Squares"

ax^2+bx+c

$$x^2-16$$

$a=1$
$b=0$ (no x-term!)
$c=-16$

$$=(x^2+4x)-4x-16$$

$$=x(x+4)-4(x+4)$$

$$=\boxed{(x-4)(x+4)}$$

FOIL

$16=4^2=4\times 4$

ac-method:
two factors of -16 $=(4)(-4)$
which sum to $b=0$

(or: two factors of 16
which differ by 0,
i.e., two "identical" factors
of 16)

#3) $25x^2 - 36$ ← quadratic

$= (5x)^2 - 6^2$

$= \boxed{(5x-6)(5x+6)}$

} notice: this is a diff of perfect squares.

Check (FOIL):

$(5x-6)(5x+6)$

$= (5x)(5x) + (5x)(6) + (-6)(5x) - 36$

$= 25x^2 + \cancel{30x} - \cancel{30x} - 36$

$= 25x^2 - 36$