1.3/1.4 SOLVING QUADRATIC EQUATIONS BY FACTORING

OBJECTIVE: To be able to factor quadratic expressions and solve quadratic equations by factoring.

F.O.I.L: (x + 4)(x – 6)

☻Factoring: FOIL backwards!!

EXAMPLE #1: Factoring x² + bx + c, where a = 1.

a) $x^{2}+5x+4 $ b) $x^{2}+11x+18$ c) $x^{2}+5x-36$

d) $x^{2}-7x+10$ e) $x^{2}-2x-35$ f) $x^{2}-x-30$

EXAMPLE #2: Factoring out a monomial (GCF).

a) $6x^{2}+9x$ b) $2x^{2}-6x-36$ c) $5x^{3}+5x^{2}-10x$

EXAMPLE #3: Factoring ax² + bx + c, where a ≠ 1.

a) $3x^{2}-17x+10$ b) $4x^{2}-4x-3$ c) $6x^{2}+5x-6$

🟎Factoring Special Cases:

 🡪Difference of two squares: a² − b² = (a + b)(a – b)

 🡪Perfect square trinomials: a² + 2ab + b² = (a + b)²

 a² − 2ab + b² = (a – b)²

EXAMPLE #4: Factoring special cases.

a) $x^{2}-16$ b) $x^{2}-49$ c) $x^{2}+10x+25$ d)$ x^{2}-16x+64$

e) $4x^{2}-9$ f) $4x^{2}-20x+25$ g) $9x^{2}+42x+49$

⁂SOLVING QUADRATIC EQUATIONS:

 🡪Zero Product Property: If ab = 0, then a = 0 or b = 0.

EXAMPLE #5: Solve:

a) (x+3)(x-5) = 0 b) x2 + 3x - 18 = 0 c) y= x2 – 3x - 4

d) f(x)=2x2 + 9x + 7 e) 3x2 = 27 f) 3x2 -10x = 23x

Example 6: The Area of a rectangle is 36 find the value of x if it has a length of (x+5) and a width of x.