2.3 Factoring Polynomials

Feb 24

-the reverse of expanding

Common Factoring

$7x^2 - 14x = 7x(x - 2)$

F O I C

Factoring trinomial without coefficient $x^2 + bx + c$

$x^2 + 5x + 6$

SUM PRODUCT

$= (x + 3)(x + 2)$

$x^2 - x - 30$

30 1
15 2
10 3
6 5

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

Factoring Difference of Squares

$x^2 - 25$

OX

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

$9x^2 - 121$

OX

$= (3x + 11)(3x - 11)$

Factoring Perfect Squares

$x^2 + 8x + 16$

$= (x + 4)^2$

$9x^2 - 30x + 25$

$= (3x - 5)^2$

Factoring trinomials ax^2+bx+c

$2x^2-3x-2$

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

FOIL

$12x^2+13x-4$

$(3x+4)(4x-1)$

COMMON FACTOR FIRST

$12x^3+38x^2+30x$

$=2x(6x^2+19x+15)$

$=2x(2x+3)(3x+5)$

Factoring by Grouping

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

$x^2(x+3)+2(x+3)$

$=(x+3)(x^2+2)$

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

$=2x^2(x-3)-(x-3)$

$=(x-3)(2x^2-1)$

Factoring by Grouping as a Difference of Squares

$x^2-6x+9-4y^2$

$=(x-3)^2-4y^2$

$=(x-3+2y)(x-3-2y)$

$9x^2-4-4y-y^2$

$=9x^2-(y^2+4y+4)$

$=9x^2-(y+2)^2$

$=(3x+y+2)(3x-(y+2))$

$=(3x+y+2)(3x-y-2)$

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