

Factoring

GCF:

$5x^2 - 10x$

$5x(x-2)$

$12x^5y^3 - 14x^9yz$

$2x^5y(6y^2 - 7x^4z)$

$3x^2y^4 + 18x^5y^3 + 7x^4y^6$

$x^2y^3(3y + 18x^3 + 7x^2y^3)$

Difference of Two Squares:

only works if subtracting & both terms are perfect squares.

$x^2 - 16$

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

$9 - 25y^2$

$(3-5y)(3+5y)$

$x^8 - 1$

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

Trinomials: X Games

$x^2 - 8x - 20$

$(x-10)(x+2)$

$x^2 + 15x + 36$

$(x+3)(x+12)$

$x^2 - 8x + 16$

$(x-4)(x-4)$

Grouping:

$8x^3 - 64x^2 + x - 8$

$(8x^3 - 64x^2) + (x - 8)$
 $8x^2(x - 8) + 1(x - 8)$
 $(8x^2 + 1)(x - 8)$

$4x^3 - 12x^2 - 5x + 15$

$(4x^3 - 12x^2) + (-5x + 15)$
 $4x^2(x - 3) - 5(x - 3)$
 $(4x^2 - 5)(x - 3)$

$12x^3 + 2x^2 - 30x - 5$

$(12x^3 + 2x^2) + (-30x - 5)$
 $2x^2(6x + 1) - 5(6x + 1)$
 $(2x^2 - 5)(6x + 1)$

Trinomials (when a ≠ 1):

$3x^2 - 8x + 4$

$(3x-2)(x-2)$

$ac = 3(4) = 12$
 $-6 \cdot -2 = 12$
 $-6 + -2 = -8$
 $3x^2 - 6x \quad | \quad -2x + 4$
 $3x(x-2) \quad | \quad -2(x-2)$

$4x^2 - 15x - 25$

$(4x+5)(x-5)$

$4 \cdot -25 = -100$
 $-20 \cdot 5 = -100$
 $-20 + 5 = -15$
 $4x^2 - 20x \quad | \quad 5x - 25$
 $4x(x-5) \quad | \quad 5(x-5)$

$6x^2 + 7x - 49$

X