

Factoring Review

factor factor
 $3x$ 12
 term term

① Greatest Common Factor (GCF)

a) $3x - 12 = 3(x - 4)$

b) $5x^2y^5 + 6x^3y^4 - 8x^6y^3$
 $= x^2y^3(5y^2 + 6xy - 8x^4)$

c) $15x^4 - 12x^3 + 18x^2 = 3x^2(5x^2 - 4x + 6)$

② Difference of Squares

a) $x^2 - 3b = (x + b)(x - b)$
 $x^2 - bx + bx - 3b$

b) $9x^2 - 16y^2 = (3x + 4y)(3x - 4y)$

c) $8x - 32x^3 = 8x(1 - 4x^2)$
 $= 8x(1 + 2x)(1 - 2x)$

③ Trinomials in the form: $x^2 + bx + c$

a) $x^2 + 9x + 18 = (x + 3)(x + 6)$

What factors of 18 add to give 9

b) $x^2 + 16x - 36 = (x + 18)(x - 2)$

④ Trinomials of the form: $ax^2 + bx + c$

a) $2x^2 + 7x + 3 = (2x^2 + 6x) + (x + 3)$
 $= 2x(x + 3) + 1(x + 3)$
 $= (x + 3)(2x + 1)$
 factors of +6 that add to give you +7

b) $4x^2 + x - 3 = (4x^2 + 4x) - 3x - 3$
 $= 4x(x + 1) - 3(x + 1)$
 $= (x + 1)(4x - 3)$

Simplifying Rational expressions

$\frac{x^2 + 4x - 5}{x^2 + 2x - 3} = \frac{(x + 5)(x - 1)}{(x + 3)(x - 1)}$

Cancel factors NOT terms $= \frac{x + 5}{x + 3}$

$\frac{\frac{3}{4}}{\frac{1}{2}} = \frac{3}{4} \cdot \frac{2}{1} = \frac{6}{4} = \frac{3}{2}$