

Review: Factoring Polynomials

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If possible, factor out the Greatest Common Factor (GCF) first. Then consider the number of terms.

4 terms

Factor by grouping.

[Video](#)

3 terms

$$x^2 + bx + c$$

Find two factors of c whose sum is b .
Factor as:

$$(x + __)(x + __)$$

[Video](#)

$$ax^2 + bx + c, \text{ where } a \neq 1$$

Find two factors of $a \cdot c$ whose sum is b . Rewrite bx as:

$$ax^2 + __ x + __ x + c$$

Now factor by grouping.

[Video 1](#)

[Video 2](#)

2 terms

The **difference** of 2 squares:

$$a^2 - b^2 = (a - b)(a + b)$$

The **difference** of 2 cubes:

$$a^3 - b^3 = (a - b)(a^2 + ab + b^3)$$

The **sum** of 2 cubes:

$$a^3 + b^3 = (a + b)(a^2 - ab + b^3)$$

Note: 1) If a polynomial cannot be factored, we can say it's prime (or irreducible).

2) Check your factoring by multiplying to see if you end up with the original polynomial.