Factoring the Sum and Difference of Two Cubes

Jonathan R. Bacolod

Sauyo High School

What is a Perfect Cube?

Perfect cubes are numbers or expressions that can be expressed to the power of 3.

How to Factor a Sum of Two Cubes?

Use the formula:

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

or

$$1\text{st}^3 + 2\text{nd}^3 = (1\text{st} + 2\text{nd})(1\text{st}^2 - 1\text{st} \cdot 2\text{nd} + 2\text{nd}^2)$$

How to Factor a Difference of Two Cubes?

Use the formula:

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

or

$$1\text{st}^3 - 2\text{nd}^3 = (1\text{st} - 2\text{nd})(1\text{st}^2 + 1\text{st} \cdot 2\text{nd} + 2\text{nd}^2)$$

How to Factor the Sum and Difference of Two Cubes?

Use the formula:

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

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

How to Factor the Sum and Difference of Two Cubes?

1. Factor out the greatest common monomial of all terms of the given expression.

How to Factor the Sum and Difference of Two Cubes?

1. Factor out the greatest common monomial of all terms of the given expression.
2. Write each term as a cube.

How to Factor the Sum and Difference of Two Cubes?

1. Factor out the greatest common monomial of all terms of the given expression.
2. Write each term as a cube.
3. Write the binomial factor. The middle sign is the same as that of the original expression.

How to Factor the Sum and Difference of Two Cubes?

1. Factor out the greatest common monomial of all terms of the given expression.
2. Write each term as a cube.
3. Write the binomial factor. The middle sign is the same as that of the original expression.
4. Write the trinomial factor. The middle sign is opposite the middle sign of the original expression. The last term is always positive.

Thank you for watching.