1.6 Factoring Polynomials – Special Cases

Some special cases of factoring can be factored in unique ways. They include difference of squares, and perfect square trinomials.

Difference of Squares

Polynomials in the form $a^2 - b^2$ always factor into a product of two binomials.

Note: This can be checked by distributing the brackets.

Examples:

1. $x^2 - 4$
2. $x^2 - 16$
3. $x^2 - 9y$
4. $100 - z^2$
5. $25v^2 - 49w^2$

Perfect Square Trinomials

The polynomial $a^2 + 2ab + b^2$ and $a^2 - 2ab + b^2$ are called perfect square trinomials and factor into the form

Examples:

1. $x^2 + 6x + 9$

2. $x^2 - 6x + 9$

3. $x^2 - 10x + 25$

4. $y^2 - 4y + 4$

5. $z^2 + 2z + 1$

*Variables can be in the "a" position and/or the "b" position.

Example: $x^2 + 6xy + 9y^2$