



Introduction to Quadratic Equations

Read the introduction to quadratic equations and answer the following questions:

1. What is a quadratic equation?

2. What is the general form of a quadratic equation?

Factoring Quadratic Expressions

Factor the following quadratic expressions:

1. $x^2 + 4x + 4$

2. $x^2 - 3x - 4$

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

Solving Quadratic Equations by Factoring

Solve the following quadratic equations by factoring:

1. $x^2 + 5x + 6 = 0$

2. $x^2 - 2x - 8 = 0$

3. $x^2 + x - 12 = 0$

Graphing Quadratic Equations

Graph the following quadratic equations:

1. $y = x^2 + 2x - 3$

2. $y = x^2 - 4x - 5$

3. $y = x^2 + x + 2$

Extension Tasks for Advanced Learners

Complete the following extension tasks:

1. Solve the equation $x^2 + 2x + 5 = 0$, which has complex roots.

2. Graph the equation $y = x^2 - 4x + 4$, which has multiple solutions.

3. Create a quadratic equation that models a real-world situation, such as the trajectory of a projectile.

Assessment

Complete the following assessment tasks:

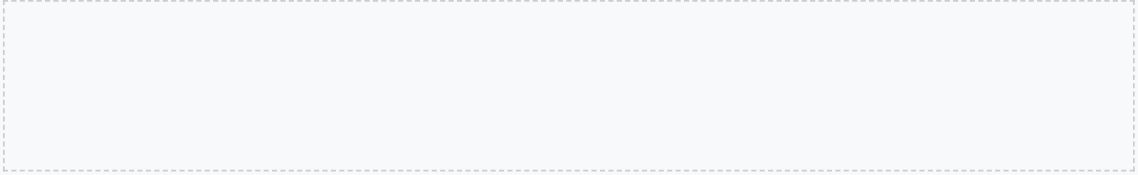
1. Multiple Choice Questions: Choose the correct answer for each question.

- What is the factored form of $x^2 + 5x + 6$?
 - $(x + 3)(x + 2)$
 - $(x + 2)(x + 3)$
 - $(x - 3)(x - 2)$
- What is the solution to the equation $x^2 + 2x + 1 = 0$?
 - $x = -1$
 - $x = 1$
 - $x = -2$

2. Short Answer Questions: Answer each question in complete sentences.

- What is the difference between factoring and graphing a quadratic equation?

- How do you solve a quadratic equation by factoring?



Conclusion

Summarize what you have learned about solving quadratic equations by factoring and graphing.

Extension

Complete the following extension tasks:

1. Research Project: Research and present on a topic related to quadratic equations, such as the history of quadratic equations or the application of quadratic equations in a specific field.

2. Math Project: Create a math project that involves solving quadratic equations, such as designing a roller coaster or a bridge.

