Solving Quadratic Equations using Quadratic Formula

LEVEL 1: The Basics

- $x^2 + 6x + 5 = 0$
- $x^2 + 7x + 10 = 0$
- $x^2 - 4x + 3 = 0$
- $x^2 - 5x + 6 = 0$
- $x^2 + 8x + 7 = 0$
- $x^2 + 3x - 4 = 0$
- $x^2 - 6x + 8 = 0$
- $x^2 - 7x + 12 = 0$
- $x^2 + 2x - 3 = 0$
- $x^2 + 9x + 14 = 0$
- $x^2 - 8x + 15 = 0$
- $x^2 - 3x - 10 = 0$
- $x^2 + 10x + 21 = 0$
- $x^2 + 6x + 9 = 0$
- $x^2 - 2x - 8 = 0$
- $x^2 - 8x + 16 = 0$
- $x^2 + 4x + 4 = 0$
- $x^2 + 5x + 6 = 0$
- $x^2 - 10x + 25 = 0$
- $x^2 - 9x + 20 = 0$

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LEVEL 2: Dive Deeper

- $2x^2 + 5x + 2 = 0$
- $4x^2 - 4x + 1 = 0$
- $3x^2 - 7x + 2 = 0$
- $x^2 - 4x + 2 = 0$
- $x^2 + 3x + 1 = 0$
- $3x^2 - 5x + 1 = 0$
- $x^2 - 5x + 3 = 0$
- $x^2 + 6x + 5 = 0$
- $2x^2 - 3x - 1 = 0$
- $2x^2 - 6x + 3 = 0$
- $x^2 + 4x + 2 = 0$
- $x^2 - 2x - 2 = 0$
- $3x^2 + 8x + 4 = 0$
- $5x^2 + 6x + 1 = 0$
- $x^2 - 6x + 7 = 0$
- $x^2 + 8x + 10 = 0$
- $2x^2 + 7x + 3 = 0$
- $3x^2 - 4x - 2 = 0$
- $x^2 + 2x - 4 = 0$
- $x^2 - 10x + 22 = 0$

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LEVEL 3: Mastering the Concept

- $x^2 = 4x - 2$
- $x^2 + 5x = 2$
- $2x^2 + 3x = 1$
- $6x^2 - 7x + 2 = 0$
- $3x^2 - 2 = 5x$
- $x^2 = 6x - 7$
- $x^2 + 7x = -10$
- $4x^2 + 12x + 9 = 0$
- $4x^2 = 8x - 3$
- $9x^2 - 25 = 0$
- $x^2 - 3x = 5$
- $x^2 + 8x + 20 = 0$
- $2x^2 + 9x = -4$
- $2x^2 - 5x + 4 = 0$
- $3x^2 = 7x - 1$
- $3x^2 + 6x + 9 = 0$

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Challenge Problems

Q1: Solve for x: $(x+1)^2 + (x-2)^2 = 25$. (Hint: Expand first, then use the quadratic formula)

Q2: For each equation, calculate $b^2 - 4ac$ and predict how many real solutions there are before solving:

1) $x^2 + 4x + 1 = 0$
2) $x^2 - 6x + 9 = 0$
3) $x^2 + 2x + 5 = 0$

Q3: Solve: $x^2 + \frac{3}{2}x + \frac{9}{16} = 0$. Simplify completely.

Q4: For what value of k does $x^2 + kx + 9 = 0$ have exactly one solution?

Q5: Solve for x in terms of a: $ax^2 - (a+1)x + 1 = 0$.

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