Factoring Trinomials $(x^2 + bx + c)$

LEVEL 1: The Basics Master the Fundamentals)

Factor each trinomial. Show your work!

- ❖ $(x^2 + 5x + 6)$

- ❖ $(x^2 + 8x + 12)$

- ❖ $(x^2 + 9x + 20)$

- ❖ $(x^2 + 6x + 8)$

- ❖ $(x^2 + 7x + 10)$

- ❖ $(x^2 - 4x + 4)$

- ❖ $(x^2 - 5x + 6)$

- ❖ $(x^2 - 7x + 10)$

- ❖ $(x^2 + x - 6)$

- ❖ $(x^2 + 2x - 8)$

- ❖ $(x^2 - 2x - 15)$

- ❖ $(x^2 + 4x - 12)$

- ❖ $(x^2 - x - 12)$

- ❖ $(x^2 + 3x - 18)$

- ❖ $(x^2 - 6x - 16)$

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Factor completely. Check for GCF first!

- ❖ $(x^2 + 10x + 21)$

- ❖ $(x^2 - 9x + 18)$

- ❖ $(x^2 + 5x - 24)$

- ❖ $(x^2 - 3x - 28)$

- ❖ $(x^2 + 11x + 24)$

- ❖ $(x^2 - 8x + 12)$

- ❖ $(x^2 + 4x - 21)$

- ❖ $(x^2 - 10x + 24)$

- ❖ $(x^2 + 7x - 30)$

- ❖ $(x^2 - 12x + 32)$

- ❖ $(x^2 + 13x + 36)$

- ❖ $(x^2 - x - 20)$

- ❖ $(x^2 + 8x - 20)$

- ❖ $(x^2 - 5x - 36)$

- ❖ $(x^2 + 15x + 56)$

Factoring Trinomials ($x^2 + bx + c$)

Factor each. Some may be prime!

- ❖ $(x^2 + 17x + 72)$

- ❖ $(x^2 - 13x + 40)$

- ❖ $(x^2 + 3x - 40)$

- ❖ $(x^2 - 2x - 48)$

- ❖ $(x^2 + 10x - 56)$

- ❖ $(x^2 - 17x + 72)$

- ❖ $(x^2 + 19x + 90)$

- ❖ $(x^2 - 7x - 60)$

- ❖ $(x^2 + 20x + 100)$

- ❖ $(x^2 - 14x + 49)$

- ❖ $(x^2 + x - 72)$

- ❖ $(x^2 - 20x + 96)$

- ❖ $(x^2 + 22x + 121)$

- ❖ $(x^2 - 9x - 52)$

- ❖ $(x^2 + 18x - 88)$

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Real-Life / Word Problems

Q1: Garden Area: A rectangular garden has an area of ($x^2 + 12x + 32$) square feet.

  - Find the length and width as binomials in terms of x).

  - If $x = 3$), what are the actual dimensions?

Q2: Projectile Motion: The height h) in meters) of a ball is $h = -x^2 + 6x + 16$).

  - Rewrite the equation in factored form to find when the ball hits the ground $h = 0$)).

Q3: Solve the following equations:

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

2. Solve: $x^2 - 7x + 12 = 0$

3. Solve: $x^2 + 3x - 10 = 0$

4. Solve: $x^2 - 4x + 12 = 24$

5. Solve: $3x^2 + 6x - 45 = 0$

Challenge Problem

1. Factor $(x^2 + (a + b)x + ab)$. Prove your answer by expanding.

2. Factor the following expression completely: $x^4 - 5x^2 - 36$.

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