

SKILL

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Factor Trinomials

Definition: A trinomial is a polynomial that has three terms. For example, $x^2 + 5x + 4$ is a trinomial. The factored form of $x^2 + 5x + 4$ is $(x + 4)(x + 1)$.

To factor a trinomial:

Step 1: Set up a product of two () where each will hold two terms. It will look like ()().

Step 2: Find the factors that go in the first positions of each set of ().

Step 3: Decide on the signs that will go in each set of ().

Step 4: Find that factors that go in the last positions of each set of ().

Example: Factor: $x^2 + 4x - 12$.

Step 1: () ()

Step 2: (x) (x) The only possible factors of x^2 are x and x .

Step 3: (x +) (x -) The last term is negative, use opposite signs.

Step 4: (x + 6) (x - 2) The factors of -12 are $\pm 1 \cdot \pm 12$ or $\pm 3 \cdot \pm 4$ or $\pm 6 \cdot \pm 2$ and the only pair of these that can have a sum of 4 (the coefficient of the middle term) is 6 and -2 .

Practice on Your Own

Factor each polynomial completely.

1. $x^2 + 5x + 4$

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

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

4. $x^2 - x - 20$

5. $x^2 + 2x - 24$

6. $x^2 + 10x + 21$

7. $x^2 - 10x + 16$

8. $x^2 - 8x - 9$

9. $x^2 - 18x + 45$

Check

Factor each polynomial completely.

10. $x^2 + 7x + 10$

11. $x^2 - 11x + 28$

12. $x^2 + 7x - 30$

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

14. $x^2 + 49x + 48$

15. $x^2 - 7x - 60$
