

## Lesson 6.3 Factoring Trinomials

Sunday, March 9, 2025 9:56 PM

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MCA Lesson  
6.3 Factoring



# Factoring and Solving Equations



## 6.3 More About Factoring Trinomials

## Example 1 – Factoring a Trinomial 1

Factor the trinomial  $4x^2 - 4x - 3$ .

Handwritten work shows the trinomial  $4x^2 - 4x - 3$  being factored by grouping. The terms are rearranged to  $4x^2 + 2x - 6x - 3$ . The first two terms are grouped as  $2x(2x + 1)$  and the last two terms are grouped as  $-3(2x + 1)$ . The common factor  $(2x + 1)$  is then factored out, resulting in  $(2x - 3)(2x + 1)$ .

Handwritten work also shows the trinomial  $4x^2 - 4x - 3$  being factored by grouping. The terms are rearranged to  $4x^2 + 2x - 6x - 3$ . The first two terms are grouped as  $2x(2x + 1)$  and the last two terms are grouped as  $-3(2x + 1)$ . The common factor  $(2x + 1)$  is then factored out, resulting in  $(2x - 3)(2x + 1)$ .

Factor the trinomial  $2x^2 + x - 15$ .

Handwritten work shows the trinomial  $2x^2 + x - 15$  being factored by grouping. The terms are rearranged to  $2x^2 + 6x - 5x - 15$ . The first two terms are grouped as  $x(2x + 3)$  and the last two terms are grouped as  $-5(x + 3)$ . The common factor  $(x + 3)$  is then factored out, resulting in  $(x + 3)(2x - 5)$ .

## Example 3 – Factoring a Trinomial

Factor the trinomial  $6x^2 + 5x - 4$ .

Handwritten work shows the trinomial  $6x^2 + 5x - 4$  being factored by grouping. The terms are rearranged to  $6x^2 - 3x + 8x - 4$ . The first two terms are grouped as  $3x(2x - 1)$  and the last two terms are grouped as  $4(2x - 1)$ . The common factor  $(2x - 1)$  is then factored out, resulting in  $(2x - 1)(3x + 4)$ .

Handwritten work also shows the trinomial  $6x^2 + 5x - 4$  being factored by grouping. The terms are rearranged to  $6x^2 - 3x + 8x - 4$ . The first two terms are grouped as  $3x(2x - 1)$  and the last two terms are grouped as  $4(2x - 1)$ . The common factor  $(2x - 1)$  is then factored out, resulting in  $(2x - 1)(3x + 4)$ .

$$3x(2x-1) - 4(2x-1) = (3x+4)(2x-1)$$

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4

## Example 4 – Factoring Completely

Factor  $4x^3 - 30x^2 + 14x$  completely.

**Solution:**

Begin by factoring out the common monomial factor.

Now, for the new trinomial  $2x^2 - 15x + 7$ ,  $a = 2$  and  $c = 7$ .

$$(2x - 1)(1x - 7)$$

$-1x$   
 $-14x$

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5

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