

FACTORING QUADRATIC POLYNOMIALS

FACTOR: $x^2 - x - 6$

Step 1: Multiply the first and third terms together

$$- 6x^2$$

Step 2: Find two numbers whose product is the number you found in step 1 and whose sum equals the center term. In this case, we need two numbers whose product is $- 6x^2$ and sum is $- x$. $- 3x$ and $2x$ work.

Step 3: Use the two numbers from step 2 to split apart the center term.

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

Step 4: Factor common factors from the first two terms and the last two terms.

$$x(x - 3) + 2(x - 3)$$

Checkpoint: There should now be a common factor in the two new terms.

Step 5: Factor the common factor.

$$(x + 2)(x - 3)$$

FACTOR: $4x^2 + 7x - 2$

Step 1: $- 8x^2$

Step 2: $8x, - x$

Step 3: $4x^2 + 8x - x - 2$

Step 4: $4x(x + 2) - (x + 2)$ (note the factoring of $- 1$ from the last two terms)

Step 5: $(4x - 1)(x + 2)$