

Factoring Trinomials where $a \neq 1$ 10/15

Factor: $3x^2 - 7x + 2$

$3 \cdot 2 = 6$

~~$\begin{matrix} 6 & & -6 \\ -1 & & -7 \end{matrix}$~~ $\begin{matrix} 1 \cdot 6 \\ 2 \cdot 3 \end{matrix}$



① GCF

② Multiply $a \& c$

③ Use the X method & list factors of the answer to step 2

④ Rewrite the problem w/ 4 terms

⑤ Factor by grouping

$$3x^2 - 7x + 2$$

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

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

$$x(3x - 1) - 2(3x - 1)$$

$$(x - 2)(3x - 1)$$

Factor: $12x^2 - 19x + 4$



$$12 \cdot 4 = \textcircled{48}$$

$$\begin{array}{r} 48 \\ \times \\ -3 \quad -16 \\ \hline -19 \end{array}$$

$$\begin{array}{l} 3 \cdot 16 \\ 2 \cdot 24 \\ 4 \cdot 12 \\ 6 \cdot 8 \\ 1 \cdot 48 \end{array}$$

$$(12x^2 - 3x)(-16x + 4)$$

$$3x(4x - 1) - 4(4x - 1)$$

$$\boxed{(3x - 4)(4x - 1)}$$

Factoring Polynomials When...

The degree is 2 (Quadratic)
The # of terms is 3 (Trinomial)
The leading coefficient $\neq 1$ (a)

$$ax^2 + bx + c$$

Steps for factoring success
1. GCF! (Always)
2. Multiply a and c
3. List the factors of the answer to step #2
4. Which factors combine to equal b?
5. Rewrite the problem as 4 terms
6. Factor by Grouping