Factoring

Difference of Two Squares, Special Trinomials, Grouping

Completely factor the expressions.

1.) $x^2 + 6x + 9$

2.) $x^2 + 8x + 16$

Examples (cont.)

3.) $x^2 - 14x + 49$

4.) $9x^2 - 30x + 25$

Examples (cont.)

5.) $4x^2 + 12x - 9$

6.) $4x^2 - 12x + 9$

Difference of Two Squares:

$$\boldsymbol{a^2 - b^2 = (a + b) \cdot (a - b)}$$

Examples:

1.) $x^2 - 9$

2.) $x^2 - 16$

3.) $x^2 - 144$

4.) $x^2 + 9$

Examples:

5.) $4x^2 - 25$

6.) $3x^2 - 108$

7.) $25x^2 - 81y^2$

8.) $100x^2 - 1$

More examples

$3x^6 - 27x^4$

$4x^4 - 100x^2$

$18x^5 - 8x$

Factoring by Grouping

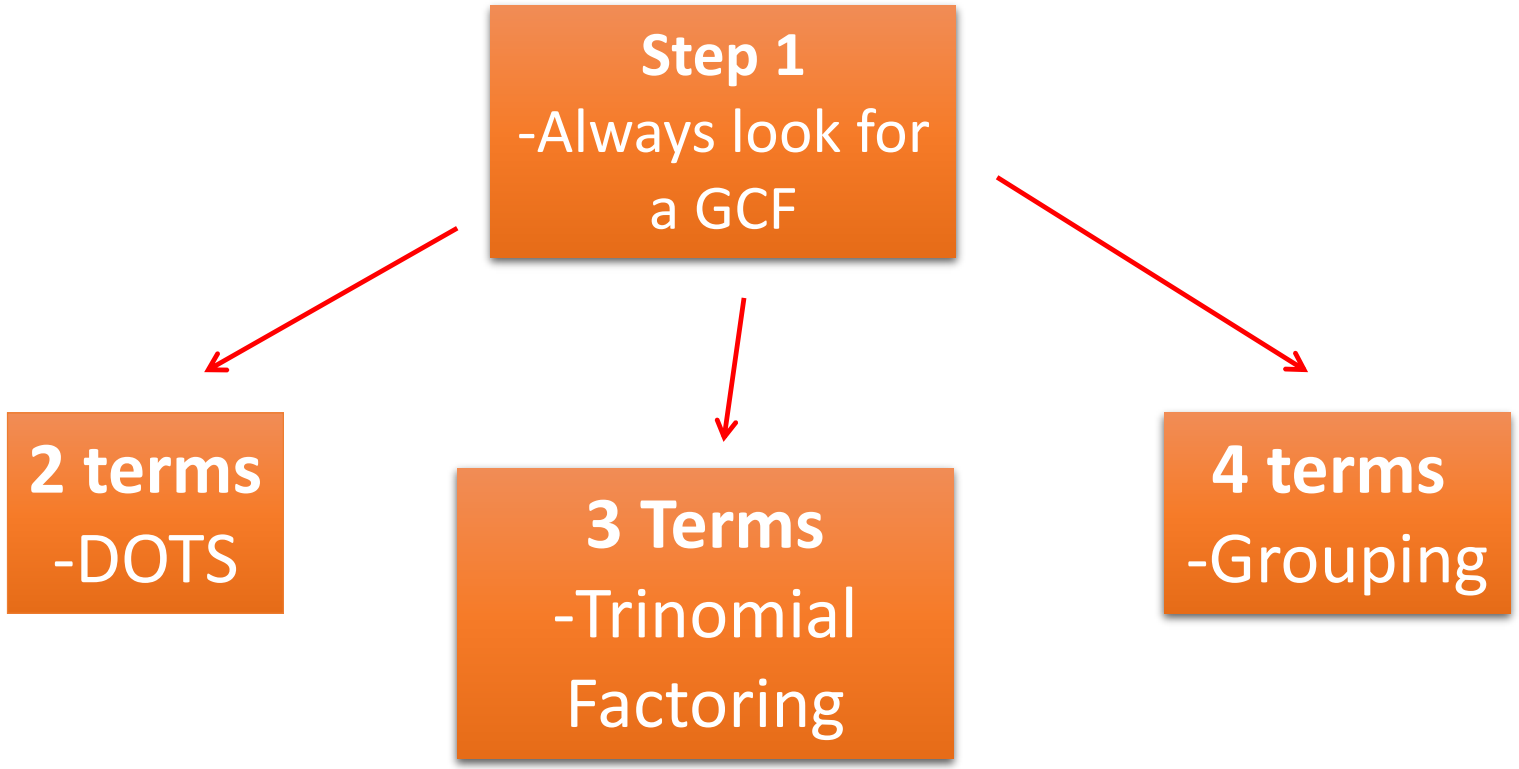
- When you have an expression with **4 terms**…
  - You have to factor it by **<u>grouping</u>**

<u>Steps to Follow</u>

1. Group the first 2 terms and the last 2 terms
   - Put parentheses around them
2. Find the GCF of both sets of parentheses
   - Factor it out
3. Rewrite the factors in new parentheses

✓*Be careful if the second sign is a minus*

Factoring Methods



Examples

- $3x + 3 + x^2 + x$
- $x^3 + 4x^2 + 6x + 24$

Examples (cont'd)

- $x^2 + 2x + 3x + 6$
- $x^3 - 2x^2 - 9x + 18$

Examples (cont'd)

- $2x^3 + 3x^2 - 50x - 75$
- $x^4 + x^3 - 12x - 12$