

6.5 Subtracting Polynomials

Subtracting polynomials is the same as adding them, with one small difference:

$$\begin{aligned} \text{Ex: 1) Simplify: } & (4x - 5) - (2x + 1) \\ & = (4x - 5) - (2x + 1) \\ & = 4x - 5 - 2x - 1 \\ & = 4x - 2x - 5 - 1 \\ & = 2x - 6 \end{aligned}$$

- ① Rewrite without brackets.
* The negative sign has to be distributed to all terms in the 2nd bracket!! This flips the sign on each term (+ \rightarrow -; - \rightarrow +)
- ② Group like terms.
- ③ Add/subtract like terms
- ④ Write in simplest form.

Ex: 2) Simplify:

$$\begin{aligned} \text{a) } & (7x + 2) - (3x - 3) \\ & = 7x + 2 - 3x + 3 \\ & = 7x - 3x + 2 + 3 \\ & = 4x + 5 \end{aligned}$$

$$\begin{aligned} \text{b) } & (x^2 + 4x) - (x^2 + 2x) \\ & = x^2 + 4x - x^2 - 2x \\ & = x^2 - x^2 + 4x - 2x \\ & = 0x^2 - 2x \\ & = -2x \end{aligned}$$

$$\begin{aligned} \text{Ex: 3) Simplify } & (3x^2 - 7x + 12) - (-4x^2 - 3x + 13) \\ & = 3x^2 - 7x + 12 + 4x^2 + 3x - 13 \\ & = 3x^2 + 4x^2 - 7x + 3x + 12 - 13 \\ & = 7x^2 - 4x - 1 \end{aligned}$$

$$\begin{aligned} \text{Ex: 4) Simplify } & (m^2 + 2mn - 6) - (3n^2 + 2mn - 5) \\ & = m^2 + 2mn - 6 - 3n^2 - 2mn + 5 \\ & = (m^2) + (2mn - 2mn) + (-6 + 5) - (3n^2) \\ & = m^2 + 0mn - 1 - 3n^2 \\ & = m^2 - 3n^2 - 1 \end{aligned}$$