Subtraction of Algebraic Expression

Understanding of Subtraction of Algebraic Expressions

- Subtraction of algebraic expressions means finding the difference between two expressions.
- While subtracting, change the sign of every term of the second expression and then add.
- Always group like terms carefully before performing subtraction.

Important Points

- Distribute the negative sign to all terms of the second expression.
- Change + to – and – to + for the second expression.
- Add like terms after changing signs.
- Arrange the final expression neatly.

Examples with Solutions

Example: Simple Subtraction of Like Terms

➢ **7x – 3x**

Solution: Like terms: 7x and 3x

Subtract coefficients: 7 – 3 = 4

Answer: 4x

Example: Subtracting Expressions with Different Variables

➢ **Subtract: (5a + 4b) from (8a + 3b)**

Solution: (8a + 3b) – (5a + 4b)

Remove brackets: 8a + 3b – 5a – 4b

Group like terms: (8a – 5a) + (3b – 4b)

Simplify: 3a – b

Example: Subtraction Involving Trinomials

➢ **Subtract: $(2x^2 + 5x + 1)$ from $(4x^2 + 3x + 7)$**

Solution: $(4x^2 + 3x + 7) - (2x^2 + 5x + 1)$

Remove brackets: $4x^2 + 3x + 7 - 2x^2 - 5x - 1$

Group like terms: $(4x^2 - 2x^2) + (3x - 5x) + (7 - 1)$

Simplify: $2x^2 - 2x + 6$

Example: Subtraction with Fractions

➢ **Subtract: $\left(\frac{3}{4}\right)x - \left(\frac{1}{2}\right)x$**

Solution: Like terms: $\left(\frac{3}{4}\right)x$ and $\left(\frac{1}{2}\right)x$

Find LCM of 2 and 4 = 4

$\left(\frac{1}{2}\right) = \frac{2}{4}$

Subtract: $\left(\frac{3}{4}\right) - \left(\frac{2}{4}\right) = \frac{1}{4}$

Answer: $\left(\frac{1}{4}\right)x$

Example: Subtraction of Multiple Expressions

➢ **Subtract: (4m + 2n) and (3m – 5n)**

Solution: $(4m + 2n) - (3m - 5n)$

Remove brackets carefully: $4m + 2n - 3m + 5n$

Group like terms: $(4m - 3m) + (2n + 5n)$

Simplify: $m + 7n$

Summary Points

- Always distribute the minus sign properly to all terms of the second expression.
- After changing signs, add like terms.
- Keep unlike terms separate.
- Be careful with signs, especially while dealing with negative numbers and fractions.
- Always simplify and arrange your final expression properly.