

Expansions (Algebraic Identities)

Chapter 4: Expansions (Algebraic Identities) · Topic 1

Key Concept

$(a+b)^2 = a^2 + 2ab + b^2$ and $(a-b)^2 = a^2 - 2ab + b^2$ are commonly used identities for expanding squared binomials.

$(a+b)(a-b) = a^2 - b^2$ is useful for quickly multiplying the sum and difference of the same two terms.

More advanced identities include $(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$, used for trinomial expansions.

Mastering these identities significantly speeds up algebraic calculations and forms the basis for factorisation techniques.

Quick Revision Notes

- $(a+b)^2 = a^2 + 2ab + b^2$.
- $(a-b)^2 = a^2 - 2ab + b^2$.
- $(a+b)(a-b) = a^2 - b^2$.
- $(a+b+c)^2$ expands with six terms.
- It includes squares and cross products.
- These identities speed up calculations.
- They form the basis for factorisation.
- Practice helps master these identities.

Practice Questions

- 1 Expand $(x+6)^2$ using the identity.
- 2 Expand $(x-4)^2$ using the identity.
- 3 Calculate $(x+3)(x-3)$ using the identity.
- 4 Use an identity to calculate 98^2 easily.
- 5 Expand $(a+b+c)^2$ for specific values.
- 6 Solve two identity-based problems.