

Algebraic Methods - Substitution and Elimination

Chapter 3: Pair of Linear Equations in Two Variables · Topic 2

Key Concept

For example, to solve $x+y=10$ and $x-y=2$ using elimination: adding the two equations directly eliminates y ($2x=12$, so $x=6$), then substituting back gives $y=4$. Both methods always give the same correct solution when applied properly; the choice between them is often a matter of which is more convenient for a specific pair of equations — substitution works well when one equation is already solved for a variable, while elimination works well when coefficients can be easily matched.

Quick Revision Notes

- Substitution method: solve one equation for a variable, substitute into the other equation.
- Elimination method: add/subtract equations (after adjusting coefficients) to eliminate one variable.
- Example: $x+y=10$ and $x-y=2$, adding gives $2x=12$, so $x=6$, then $y=4$.
- Both methods give the same correct solution; choice depends on convenience for the specific equations.

Practice Questions

- 1 Solve using substitution: $x+y=10$ and $x-y=2$.
- 2 Solve using elimination: $2x+3y=13$ and $2x-3y=-1$.
- 3 Explain when you would prefer the elimination method over substitution.