Matrix algebra and determinants

Learn and practise | Free preview

A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the worked example, then show each step in the practice questions. Show the mathematical steps. A calculator, graphing tool or CAS may be used to check results where useful.

What you will practise

- Matrices

Useful starting skills: Year 10 and relevant Year 10A algebra, functions and trigonometry; concurrent Methods supports these topics.

Matrix multiplication is associative and distributive but generally not commutative. Matrix equations must preserve order when multiplying by inverses.

A 2×2 determinant identifies invertibility and signed area scaling. If det A=0, the transformation collapses area and the system may have no or many solutions.

Worked example

A=[[2, 1], [1, 1]], b=(5, 3). Solve A x=b.

$A^{(-1)}$=[[1, -1], [-1, 2]]

multiply by b.

Answer: x=(2, 1).

Try it yourself

Name: _____ Date: _____

1. Find determinant of [[4, 2], [1, 3]].

2. Find inverse of [[1, 2], [0, 1]].

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 10.

$4\times3-2\times1$.

2. [[1, -2], [0, 1]].

The determinant is 1; apply the inverse formula.

Curriculum reference: Specialist Mathematics Units 1–2 — Matrices

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