Understand geometric vector representations and geometric/coordinate definitions of the dot product

Key knowledge | Free preview

Learning target: Understand geometric vector representations and geometric/coordinate definitions of the dot product.

A vector records magnitude and direction independently of where its arrow is drawn. Coordinates, basis notation and column matrices represent the same object. The dot product relates component calculation to angles and projection. Distinguish a signed scalar projection from the vector projection along a direction.

Try the mathematics

Task 1. Let a=(3,4), b=(1,-2). Express a in basis and column form, calculate |a|, a unit vector in its direction, 2a-b and a·b.

Continue with the full worksheet

The complete resource has 2 focused task sets and substantive worked solutions. Use an exercise book or print the A4 worksheet. This preview shows the first task without its full solution.

Find this resource: https://resources.aspiretopowerlearning.com.au/vce/skills/sm-u2-o1-kk-13/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Unit 2; Outcome 1; Key knowledge; bullet 13; p. 69.

The learning target is a concise paraphrase. Aspire reference: sm-u2-o1-kk-13. This is an internal identifier, not an official VCAA code.

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