Calculate with vectors and interpret the operations geometrically

Key skills | Free preview

Learning target: Calculate with vectors and interpret the operations geometrically.

Three-dimensional vectors use the same linear operations as plane vectors, with an additional component. A dot product measures alignment and projection; a cross product provides a perpendicular vector and an oriented area. Linear dependence means one vector can be built from the others, which limits the dimension they span.

Try the mathematics

Task 1. Let u=(1,2,2), v=(2,-1,0). Find |u|, a unit vector along u, u·v and u×v. Interpret the dot and cross products geometrically.

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-u34-o1-ks-10/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key skills; bullet 10; p. 115.

The learning target is a concise paraphrase. Aspire reference: sm-u34-o1-ks-10. This is an internal identifier, not an official VCAA code.

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