Understand vector definitions, operations, geometric representations and linear dependence/independence

Key knowledge | Free preview

Learning target: Understand vector definitions, operations, geometric representations and linear dependence/independence.

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-kk-10/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key knowledge; bullet 10; p. 114.

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

Free preview: share intact with attribution, without charging. Full resource rights are not included.

Original independent practice. Not published or endorsed by VCAA. The activity is not an official SAC, examination or complete treatment of every clause of a broad curriculum requirement.