Understand contradiction, contrapositive, counterexamples and the structure of induction

Key knowledge | Free preview

Learning target: Understand contradiction, contrapositive, counterexamples and the structure of induction.

A proof must establish the whole stated claim under explicit assumptions. A direct proof follows implications; a contrapositive proves an equivalent implication; a contradiction exposes an impossible consequence of denying the claim. Induction needs both a starting case and a step for an arbitrary admissible integer.

Try the mathematics

Task 1. For integer n, prove: if n^2 is even, n is even. Identify the contrapositive. Then explain why testing n=2,4,6 would not prove the claim.

Continue with the full worksheet

The complete resource has 3 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-u1-o1-kk-03/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Unit 1; Outcome 1; Key knowledge; bullet 3; p. 61.

The learning target is a concise paraphrase. Aspire reference: sm-u1-o1-kk-03. 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.