Producing and checking a counterexample

Key skills | Free preview

Learning target: Use technology to produce examples or counterexamples for a claim.

Technology is useful for finding examples and counterexamples, especially through graphs, tables and parameter experiments. A single valid counterexample defeats a universal claim, but repeated successful tests do not prove it. Show the exact input and mathematical evidence, then explain clearly which claim is refuted and which broader conclusion still needs a proof.

Try the mathematics

Task 1. Use a symbolic derivative, table and graph to refute the claim “Every stationary point is a local maximum.” Use $f(x)=x^3$.

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/aspire-mm-u34-o3-ks-04/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 3; Key skills; bullet 4; p. 104.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u34-o3-ks-04. This is an internal identifier, not an official VCAA code.

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