Derivative signs, curve sketches and optimisation

Key skills | Free preview

Learning target: Use derivatives to sketch elementary polynomials and solve straightforward maximum/minimum problems.

A derivative’s sign identifies intervals of increase and decrease. A sign change at a stationary point distinguishes a local peak from a local trough; zero derivative alone is not enough. Use this information in a complete sketch. In an optimisation model, state the feasible interval and compare the stationary candidate with the boundary behaviour.

Try the mathematics

Task 1. For $f(x)=x^3-3x$, find stationary points, classify them using signs of f', and sketch the curve with intercepts and its inflection point.

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-u2-o1-ks-10/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Unit 2; Outcome 1; Key skills; bullet 10; p. 55.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u2-o1-ks-10. This is an internal identifier, not an official VCAA code.

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