Derivative signs, curve sketches and optimisation

Key knowledge | Free preview

Learning target: Relate the sign of a polynomial's gradient near a point to the graph's local behaviour.

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-kk-10/

Study-design reference

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

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u2-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.