Sketch and describe specified functions/relations by hand, using derivatives to identify features

Key skills | Free preview

Learning target: Sketch and describe specified functions/relations by hand, using derivatives to identify features.

A rational curve may need both algebra and calculus to reveal its structure. Polynomial division exposes an oblique asymptote; first and second derivatives identify turning behaviour and concavity. A discontinuity is not an inflection point, even if the concavity differs on opposite sides of its excluded input.

Try the mathematics

Task 1. Analyse $f(x)=(x^2+1)/(x-1)$: state its domain, intercepts and asymptotes; find stationary points and concavity. Use the results for a labelled hand sketch.

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-ks-02/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key skills; bullet 2; p. 115.

The learning target is a concise paraphrase. Aspire reference: sm-u34-o1-ks-02. This is an internal identifier, not an official VCAA code.

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