Differentiate implicit relations, by hand for simple cases

Key skills | Free preview

Learning target: Differentiate implicit relations, by hand for simple cases.

An inverse-circular derivative requires its domain conditions. Implicit differentiation applies the chain rule whenever y depends on x, and differentiating again requires retaining y′ terms before substitution. A second derivative provides concavity information, but a zero alone does not prove an inflection without a sign change.

Try the mathematics

Task 1. Differentiate y=arctan(2x) twice. Find its inflection point and justify the change in concavity. State the domain of the derivatives.

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-06/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key skills; bullet 6; p. 115.

The learning target is a concise paraphrase. Aspire reference: sm-u34-o1-ks-06. This is an internal identifier, not an official VCAA code.

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