Trapezia, antiderivatives and exact integrals

Key knowledge | Free preview

Learning target: Understand trapezium approximation, the basic fundamental-theorem idea and the connection between definite integrals and area.

The trapezium rule approximates accumulation from sampled heights. Refining a partition can improve the approximation, but the shape of the curve influences whether it overestimates or underestimates. The fundamental theorem links an exact definite integral with an antiderivative's endpoint difference. Differentiate the proposed antiderivative before using it to check the calculation.

Try the mathematics

Task 1. Approximate $\int_0^2 x^2 dx$ using two equal trapezia and then four equal trapezia. Show the heights, interval width and both sums.

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-o1-kk-13/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 1; Key knowledge; bullet 13; p. 102.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u34-o1-kk-13. This is an internal identifier, not an official VCAA code.

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