Integral properties and signed area

Key knowledge | Free preview

Learning target: Know properties of antiderivatives and definite integrals.

Definite integrals add over adjacent intervals and reverse sign when the limits are reversed. They measure signed accumulation, so negative parts can cancel positive parts. Geometric area counts both parts positively. An antiderivative includes an arbitrary constant, but that constant cancels when endpoint values are subtracted in a definite integral.

Try the mathematics

Task 1. Given $\int_0^2 f(x)dx=5$ and $\int_2^5 f(x)dx=-1$, find $\int_5^0 f(x)dx$ and $\int_0^5[3f(x)+2]dx$. Explain each property used.

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-12/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 1; Key knowledge; bullet 12; p. 102.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u34-o1-kk-12. This is an internal identifier, not an official VCAA code.

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