Know antiderivative methods, related graph families and the graphical meaning of definite integration

Key knowledge | Free preview

Learning target: Know antiderivative methods, related graph families and the graphical meaning of definite integration.

Choose an integration technique from the structure of the integrand, then verify by differentiation. A substitution reverses the chain rule, integration by parts reverses the product rule, and inverse-circular patterns recognise standard derivatives. A family of antiderivatives differs by constants, which shift graphs without changing their gradients.

Try the mathematics

Task 1. Find antiderivatives of $2x/(x^2+9)$, $1/\sqrt{(16-x^2)}$ for $|x|<4$, and $3/(9+x^2)$. Name the recognition or substitution used.

Continue with the full worksheet

The complete resource has 3 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-kk-07/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key knowledge; bullet 7; p. 114.

The learning target is a concise paraphrase. Aspire reference: sm-u34-o1-kk-07. This is an internal identifier, not an official VCAA code.

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