Algorithm control in numerical integration

Key knowledge | Free preview

Learning target: Understand how ordered operations, branches and loops control technological algorithms and simulations.

An implemented algorithm relies on correctly ordered instructions, decisions and repetition. Initialisation establishes a valid starting state; branches choose the next action; a stopping rule connects the process to an accuracy target. Trace several steps before trusting a full run, and record a limit or error condition so a failed calculation does not silently continue.

Try the mathematics

Task 1. Implement a trapezium-rule algorithm for $\int_0^2 x\, e^{(-x)} dx$ with n=4. State the initialisation, repeated operation, parameter check and final calculation.

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-o3-kk-07/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 3; Key knowledge; bullet 7; p. 104.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u34-o3-kk-07. This is an internal identifier, not an official VCAA code.

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