Know modelling contexts and analytical/numerical methods for differential equations

Key knowledge | Free preview

Learning target: Know modelling contexts and analytical/numerical methods for differential equations.

A differential equation constrains rates rather than directly giving a function. Initial conditions select a particular solution from a family. Separation may lose an equilibrium if you divide by a vanishing factor, so check it independently. A numerical method approximates the local slope and needs both a step size and a starting point.

Try the mathematics

Task 1. Solve $y' = xy$ with $y(0) = 2$ and verify the result. Also solve $y'' = 6x$ with $y'(0) = 2, y(0) = 1$.

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-09/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Units 3–4; Outcome 1; Key knowledge; bullet 9; p. 114.

The learning target is a concise paraphrase. Aspire reference: sm-u34-o1-kk-09. This is an internal identifier, not an official VCAA code.

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