Numerical roots and parameter cases

Key knowledge | Free preview

Learning target: Understand analytic, graphical and numerical equation methods, exact versus approximate real solutions and the effect of domain restrictions.

Different equation forms call for different solution methods. A graph can locate roots and suggest a starting interval, while a numerical iteration refines a particular root. General parameter equations may require separate exceptional cases. Report whether a result is exact or approximate, and substitute back into the original equation to check it.

Try the mathematics

Task 1. For $f(x)=x^3-2x-2$, show there is a root in $[1,2]$. Use Newton's method from $x_0=2$ for three steps and report the root to four decimal places.

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-09/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 1; Key knowledge; bullet 9; p. 102.

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

Free preview: share intact with attribution, without charging. Full resource rights are not included.

Original independent practice. Not published or endorsed by VCAA. The activity is not an official SAC, examination or complete treatment of every clause of a broad curriculum requirement.