Connect transition diagrams, matrices and regularity.

Key knowledge | Free preview

Learning target: Connect transition diagrams, matrices and regularity.

A regular stochastic transition matrix has a positive integer power whose entries are all strictly positive. This condition supports convergence to a unique equilibrium distribution in a finite closed model. Merely having columns sum to one does not guarantee convergence. Calculate successive states and examine the matrix structure before making a long-run claim.

Try the mathematics

Task 1. Compare T=[[0.75,0.25],[0.25,0.75]] with U=[[0,1],[1,0]]. Are they regular? Explain, and calculate the first four states under U starting at [[80],[20]].

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-internal-gm-u34-o1-aos2-matrices-kk-05/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). General Mathematics; Units 3–4; Outcome 1; Key knowledge; Matrices; bullet 5; p. 91.

The learning target is a concise paraphrase. Aspire reference: aspire-internal-gm-u34-o1-aos2-matrices-kk-05. This is an internal identifier, not an official VCAA code.

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