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Cuoco, A.A.; Goldenberg, E.P.

Mathematical induction in a visual context.

Interact. Learn. Environ. 2, No. 3-4, 181-204 (1992).

The article focuses on the use of recursively defined fractal structures as a context for investigating mathematical induction. The paper exemplifies the use of computer experiments in visually oriented mathematics as a powerful means for engaging students and developing mathematical ways of thinking. Using Fractal Explorer, a Logo-based tool for creating and exploring fractals, the article shows how the links between key ideas in geometry, algebra, and calculus can be made salient and visually compelling to high school students. Detailed vignettes show students' use of the program in intensive mathematical investigations. The Fractal Explorer employs local maps to generate fractals: rotation, translation, and contraction maps are relative to a local point associated with each iterate in the fractal structure. This contrasts with MultiMap where maps are functions defined globally on the plane. Both programs support the creation of self-similar figures that are often very ornate and beautiful. (orig.)

Classification: E44

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