1035-R1-1817 **David J Hunter*** (dhunter.westmont@gmail.com), Department of Mathematics, Westmont College, 955 La Paz Road, Santa Barbara, CA 93108. *Teaching Induction using Fractals.*

Fractals can help students understand recursive definitions and inductive arguments because a fractal is a picture of recursion. Self-similarities in fractals illustrate the *top-down* recursive paradigm: a recursive object contains (smaller) copies of itself. Sequences of patterns that approximate fractals illustrate the *bottom-up* recursive paradigm: the recursive part of a definition tells how to get the next (bigger) object. Familiar examples such as the Koch snowflake and the Sierpinski gasket have simple recursive definitions that are appropriate for a first course in discrete mathematics. Properties of the sequence $S(1), S(2), S(3), \ldots$ of approximating shapes are natural to state as properties of the nth shape $S(n)$, motivating proofs by induction. In addition, fractal models of finite geometries can connect the study of induction with previous discussions of mathematical logic. While the topic of fractals is rarely found in traditional discrete mathematics texts, the examples given in this talk are designed for introductory discrete mathematics courses. (Received September 20, 2007)