

Math 2001: Homework W4

The following assignment will be graded with an emphasis on clarity of exposition. You should write in complete sentences, be as precise as possible, and be mathematically correct (both in content and format). Be sure to include a title, a short introduction to the topic, and to define all the relevant mathematical terms. The assignment should be **typed**.

This assignment deals with the dominoes sequence and the stairs sequences. Explain to the reader why these are really the Fibonacci sequence. Be sure to

- (a) Explain what recursive sequences are, and how they are determined.
- (b) Use the Fibonacci sequence to illustrate the ideas discussed in (a).
- (c) Explain what the domino sequence and the stairs sequence are.
- (d) State and prove (using recurrences) a theorem addressing how the two sequences are Fibonacci sequences.
- (e) State a corollary that gives direct formulas for the n th term of each sequence.

Note: You should only need induction for (d).