Math 491, Problem Set #8
(due 10/7/03)

1. Let a_n be the number of domino tilings of a 4-by-n rectangle, with $n \geq 0$ (we put $a_0 = 1$ by convention).

   (a) Prove that the sequence $a_0, a_1, \ldots$ satisfies a linear recurrence relation of order 16 or less.

   (b) Prove that the sequence $a_0, a_1, \ldots$ satisfies a linear recurrence relation of order 8 or less.

   (c) Prove that the sequence $a_0, a_1, \ldots$ satisfies a linear recurrence relation of order 6 or less.

   (d) Prove that the sequence $a_0, a_1, \ldots$ does not satisfy a linear recurrence relation of order 2 or less.