UW Math Circle

October 13, 2016

Homework

1. A knight begins in the lower left hand corner of a chessboard. Can it travel to the upper right hand corner of the chessboard, hitting every square of the chessboard exactly once in the process?

2. Can you arrange the numbers 1 through 9 in a sequence so that there is an odd number of numbers between 1 and 2, 2 and 3, . . . , and 8 and 9?

3. A grasshopper lives on an infinite number line. She started at 0, then jumped 1 step to either the left or the right. On her next jump, she jumped 2 steps to the left or right. Then 3, then 4, . . . , then 2015. Could she end up where she started?

4. (a) Show that every magic square made of the numbers 1 through 9 has the same number in its middle square.

   (b) How many magic squares are there made of the numbers 1 through 9?