Lesson 8: Games and Geometry III

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Problem 1.
Show that in a game of tic-tac-toe on an infinite board the second player does not have a winning strategy.

Problem 2.
Two players are playing a game at night on the streets of the Candy Kingdom. The streets of the Candy Kingdom make a rectangular grid. Every turn consists of finding a not yet lit intersection, and putting a projector there, which lights up everything to the right and up of itself (including the intersection it is on). The person, after whose move the whole kingdom is lit for the first time loses. Who has a winning strategy?

Problem 3.
Kiselev 251, page 96.

Problem 4.
Kiselev 253, page 96.

Problem 5.
Suppose n points are marked on the plane, where $n \geq 9$. It is known that for any 9 of the points one can draw two circles so that all 9 points lie on those circles. Show that it is possible two draw two circles so that all n points lie on them.