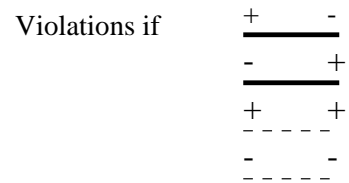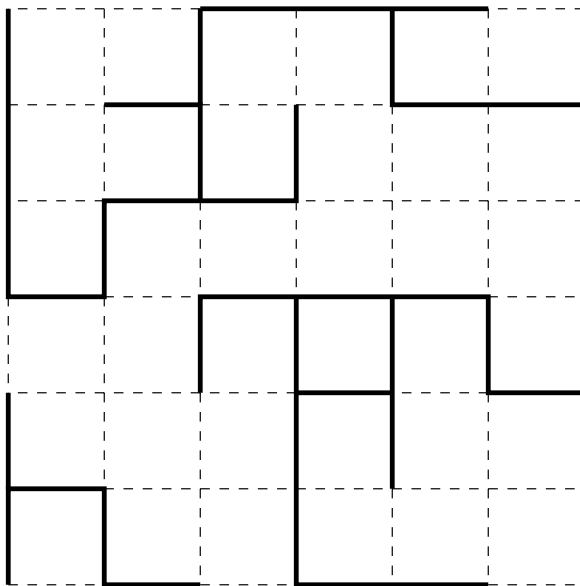# Spin Glass

Consider the 7×7 grid drawn below. Given an assigment of signs (+ or -) to the vertices of this grid, a *violation* corresponds to either a thick (solid) edge with two different signs at its endpoints or a thin (dashed) edge with identical signs at its endpoints. The goal is to find an assignment of signs which minimize the total number of violations in the grid.

As you'll probably realize, although finding a "good" assignment of signs might not be that difficult, providing a proof that your solution is optimal is in fact much more challenging (and a short proof exists for any instance).