Assignment 3, Due at 11:35 on Tuesday April 1st

1. Show that for any d, $p_H(Z^{d+1})$ is strictly less than $p_H(Z^d)$.

2. Prove formally the following variant of the missing part of the assymptotic result on percolation on Z_d: that for all $\epsilon > 0$ there is a $c > 0$ such that for large enough d, if we take $[d]^d$ and put each edge in a subgraph H with probability $p = \frac{1+\epsilon}{2d}$ then if x is a vertex with no coordinates equal to 1 or d, the probability that x is adjacent (in $[d]^d$) to a vertex in a component of H of size at least d^{100} exceeds $1 - 2^{-cd}$.