Problem 1

Suppose we are looking at a binary classification problem, and for a test example $q$, a close neighbor of $q$ has the wrong label with probability $p = 0.3$. Also assume that the neighbors of $q$ are drawn independently.

1. What is the probability that 1-NN gives the correct answer on $q$?
2. What is the probability that 3-NN gives the correct answer on $q$?
3. What is the probability that $(2m + 1)$-NN gives the correct answer on $q$ for integer $m$?