## GRAVITATION, n.

"The tendency of all bodies to approach one another with a strength proportion to the quantity of matter they contain - the quantity of matter they contain being ascertained by the strength of their tendency to approach one another. This is a lovely and edifying illustration of how science, having made A the proof of B, makes B the proof of A."

You have a population of $k$ Tribbles. This particular species of Tribbles live for exactly one day and then die. Just before death, a single Tribble has the probability $P_{i}$ of giving birth to $i$ more Tribbles. What is the probability that after $m$ generations, every Tribble will be dead?

## Input

The first line of input gives the number of cases, $N . N$ test cases follow. Each one starts with a line containing $n(1 \leq n \leq 1000), k(0 \leq k \leq 1000)$ and $m(0 \leq m \leq 1000)$. The next $n$ lines will give the probabilities $P_{0}, P_{1}, \ldots, P_{n-1}$.

## Output

For each test case, output one line containing 'Case \#x:' followed by the answer, correct up to an absolute or relative error of $10^{-6}$.

## Sample Input

## 4

311
0.33
0.34
0.33

312
0.33
0.34
0.33

312
0.5
0.0
0.5

422
0.5
0.0
0.0
0.5

## Sample Output

Case \#1: 0.3300000
Case \#2: 0.4781370
Case \#3: 0.6250000
Case \#4: 0.3164062

