

HELP ABHISHEK

ABHISHEK is weak of mathematics he is not able to solve the sequences frequently. So he invited topcoders to develop a program for solving the sequence. He managed to solve the other kind of sequences except one kind.

The sequence description is as follows:

$$(x-w)(x-w^2)(x-w^3)(x-w^4)\dots\dots\dots(x-w^{n-1})$$

here x is a number and w is nth root of unity.

Input

first line contain number of test cases t. Then t line follow x and n. x and n seprated by a space.

Constraints:-

$$2 \leq x \leq 1000$$

$$2 \leq n \leq 1000$$

$$t \leq 410$$

Output

print result per case according to above sequence and also keep in mind if there is any term in decimal then write it in form of num/deno. see the I/O for further detail

Example

Input:

1

5 10

Output:

9765624/4

IF your solution is fast enough then go for harder classical problem

<http://www.spoj.com/problems/COMPLEX2/>