Adjacent Add

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Little Cyan Fish has a sequence of n integers, denoted by $a_1, a_2, \ldots, a_n$.

For a given integer $k \geq 2$, Little Cyan Fish can perform the following series of operations any number of times (including zero):

- First, choose an integer i such that $1 \leq i \leq n-1$, and choose an integer x (x can be negative).
- Then, add x to a_i, and add $k \cdot x$ to a_{i+1}.

Little Cyan Fish wants to know if he can make all the elements of a equal after performing any number of operations.

Input

There are multiple test cases in a single test file. The first line of the input contains an integer T ($T \geq 1$) indicating the number of test cases. For each test case:

The first line of the input contains two integers n and k ($n \geq 2$, $2 \leq k \leq 10^9$).

The next line of the input contains n integers $a_1, a_2, \cdots, a_n$ ($0 \leq a_i \leq 10^9$).

It is guaranteed that the sum of n over all test cases does not exceed 5×10^5.

Output

For each test case, output a single line with a single word "`Yes`" if it is possible to make all elements of A equal, or "`No`" otherwise.

Example

standard input	standard output
3 3 2 9 4 2 2 4 4 7 5 3 40 63 64 96 1	Yes Yes No

Note

For the first test case, you can make all elements of a equal using the following operations:

- Choose $i = 2$, $x = 4$. Add 4 to a_2 and 8 to a_3. The array becomes $a = (9, 8, 10)$.
- Choose $i = 1$, $x = 1$. Add 1 to a_1 and 2 to a_2. The array becomes $a = (10, 10, 10)$.

For the second test case, you can make all elements of a equal using the following operations:

- Choose $i = 1$, $x = -1$. Add -1 to a_1 and -4 to a_2. The array becomes $a = (3, 3)$.