B. Prime Number Obsession Turns Into Madness

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Sourav is obsessed with prime numbers. But his obsession has turned into madness.

He is fascinated by the idea of a prime number — a number that cannot be divided by anything except 1 and itself. What disturbs him is that there's no simple formula or pattern to predict the occurrence of prime numbers. Many famous mathematicians have proposed conjectures, but the enigma remains unsolved.

One late night, while Sourav was thinking deeply about prime numbers, he fell asleep. In his dream, he saw a goddess — **Namagiri** — who whispered a mysterious formula:

$$n = 2^{2^m} + 1$$

She claimed that this formula always produces a prime number for every non-negative integer $m \in \{0, 1, 2, 3, \dots\}$.

Sourav, intrigued, asked for a proof — but just as she began to explain, his niece woke him up. The proof was lost in the fog of dreams.

Now Sourav is curious: **for a given number n, is there a non-negative integer m such that:**

$$n = 2^{2^m} + 1$$

and n **is a prime number**?

Help Sourav determine whether, for a given number n, there exists a non-negative integer m such that $n = 2^{2^m} + 1$ and n is a prime number. If both conditions are satisfied, print any form of `yes`; otherwise, print any form of `no`.

Input

Each test contains multiple test cases. The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases.

The description of the test cases follows: Each test case contains a single integer n ($2 \le n \le 2^{63} - 1$).

Output

For each test case, if n can be expressed in the form $2^{2^m} + 1$ and is a prime number, print on a newline any of `yes`, `Yes`, `yEs`, `yeS`, `yES`, `YeS`, `YEs`, `YES` otherwise, print any of:`no`, `No`, `nO`, `NO`

Example

standard input	standard output
5 2 3 5 7 73939133	NO YES YES NO NO

Note

If $n = 5$, then there exists an $m = 1$ such that: $n = 2^{2^1} + 1$. The number $n = 5$ is also a prime number.