Fermat's little theorem: to test given number is prime or not

$$a^{p-1} \equiv 1 mod\ p$$

p is the given number

a is an integer < p

ex: Check whether number 5 is prime or not using Fermat's little theorem

p=5

a= 1,2,3,4

apply these numbers to equation

$1^4 \equiv 1 mod\ 5$ True

$2^4 \equiv 1 mod\ 5$ True

$16 \equiv 1 mod\ 5$ True

$3^4 \equiv 1 mod\ 5$ true

$4^4 \equiv 1 mod\ 5$ true

The equation of Fermat's little theorem satisfies for all the values of a from (1 to p-1)

Therefore given number 5 is prime

Example 2:

Check the number 6 is prime or not using Fermat's little theorem

Soln:

p=6

a = 1,2,3,4,5

$a^{p-1} \equiv 1 mod\ p$

$1^5 \equiv 1 mod\ 6$ True

$2^5 \equiv 1 mod\ 6$ False Therefore given number 6 is not prime

$3^5 \equiv 1 mod\ 6$

$4^5 \equiv 1 mod\ 6$

$5^5 \equiv 1 mod\ 6$