

Mathematics

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(Chapter – 1) (Real Numbers)(Exemplar Problems)
(Class – X)

Exercise 1.3

Question 11:

Show that 12^n cannot end with the digit 0 or 5 for any natural number n .

Answer 11:

If any number ends with the digit 0 or 5, it is always divisible by 5.

If 12^n ends with the digit zero it must be divisible by 5.

This is possible only if prime factorization of 12^n contains the prime number 5.

Now,

$$12 = 2 \times 2 \times 3 = 2^2 \times 3$$

$$\Rightarrow 12^n = (2^2 \times 3)^n = 2^{2n} \times 3^n$$

Since, the factorization does not contains 5.

Hence, there is no value of n (Natural number) for which 12^n ends with digit zero of five.

