

# Mathematics

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

## Exercise 1.3

### Question 6:

If  $n$  is an odd integer, then show that  $n^2 - 1$  is divisible by 8.

### Answer 6:

Let  $a = n^2 - 1$  ... (i)

Given that,  $n$  is an odd integer.

$\therefore n = 1, 3, 5, \dots$

From equation (i), at  $n = 1$ ,

$$a = (1)^2 - 1 = 1 - 1 = 0, \text{ which is divisible by 8.}$$

From equation (i), at  $n = 3$ ,

$$a = (3)^2 - 1 = 9 - 1 = 8 \text{ which is divisible by 8.}$$

From equation (i), at  $n = 5$ ,

$$a = (5)^2 - 1 = 25 - 1 = 24, \text{ which is divisible by 8.}$$

Hence,  $(n^2 - 1)$  is divisible by 8, when  $n$  is an odd integer.

