

1 JEE Main 2020 (Online) 2nd September Morning Slot  
MCQ (Single Correct Answer)

If  $R = \{(x, y) : x, y \in \mathbb{Z}, x^2 + 3y^2 \leq 8\}$  is a relation on the set of integers  $\mathbb{Z}$ , then the domain of  $R^{-1}$  is :

- A  $\{0, 1\}$
- B  $\{-2, -1, 1, 2\}$
- C  $\{-1, 0, 1\}$
- D  $\{-2, -1, 0, 1, 2\}$

### Explanation

Given  $R = \{(x, y) : x, y \in \mathbb{Z}, x^2 + 3y^2 \leq 8\}$

So  $R = \{(0,1), (0,-1), (1,0), (-1,0), (1,1), (1,-1), (-1,1), (-1,-1), (2,0), (-2,0), (2,1), (2,-1), (-2,1), (-2,-1)\}$

$\Rightarrow R : \{-2, -1, 0, 1, 2\} \rightarrow \{-1, 0, 1\}$

$\therefore R^{-1} : \{-1, 0, 1\} \rightarrow \{-2, -1, 0, 1, 2\}$

$\therefore$  Domain of  $R^{-1} = \{-1, 0, 1\}$