

Q) The number of integral values of m for which the equation

$(1 + m^2)x^2 - 2(1 + 3m)x + (1 + 8m) = 0$ has no real root is :

A) 2

B) Infinity

C) 1

D) 3

Solution:

$$(1 + m^2)x^2 - 2(1 + 3m)x + (1 + 8m) = 0$$

Given equation has no real solution,

\therefore Discriminant (D) < 0

$$\Rightarrow 4(1 + 3m)^2 - 4(1 + m^2)(1 + 8m) < 0$$

$$\Rightarrow 4[9m^2 + 6m + 1 - 8m - 1 - 8m^3 - m^2] < 0$$

$$\Rightarrow -8m^3 + 8m^2 - 2m < 0$$

$$\Rightarrow -2m(4m^2 - 4m + 1) < 0$$

$$\Rightarrow m(2m - 1)^2 > 0$$

$\therefore m > 0$ and $m \neq 1/2$

So we can say number of integral values of m are infinitely many.