

Que: If a is an integer lying in $[-5, 30]$ then the probability that the graph $y = x^2 + 2(a+4)x - 5a + 64$ is strictly above the x -axis is :-

Soln: $x^2 + 2(a+4)x - 5a + 64 \geq 0$

for quadratic always positive.

$D \leq 0$ $\Rightarrow (a+4)^2 - (-5a+64) < 0$

$\Rightarrow a^2 + 13a - 48 < 0$

$\Rightarrow (a+16)(a-3) < 0$

$\Rightarrow -16 < a < 3$ but $a \geq -5$

So $-5 \leq a \leq 2$

So favourable cases are 8
total number of cases in $[-5, 30]$ are 36

So probability = $\frac{8}{36}$