Question 9: If the product of the roots of the equation $x^2 - 3kx + 2e^{2\log k} - 1 = 0$ is 7, then the roots are real for k equal to

(a) 1

(b) 2

(c) 3

(d) 7

Solution:

Given $x^2 - 3kx + 2e^{2\log k} - 1 = 0$

=> $x^2 - 3kx + 2k^2 - 1 = 0$ (since $n \log x = \log x^n$, $e^{\log x} = x$)

Product of roots = 7

=> $2k^2 - 1 = 7$

=>$2k^2 = 8$

=>$k^2 = 4$

=> k = 2 or -2.

For real roots, k>0.

So k = 2

Hence option b is the answer.