AI5002: Assignment 4

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Download all latex-tikz codes from

https://github.com/Debolena/AI5002−Probability−and−Random−Variables/tree/main/Assignment_4

1 Problem

A missing helicopter is reported to have crashed somewhere in the rectangular region shown in Fig. 0. What is the probability that it crashed inside the lake shown in the figure?

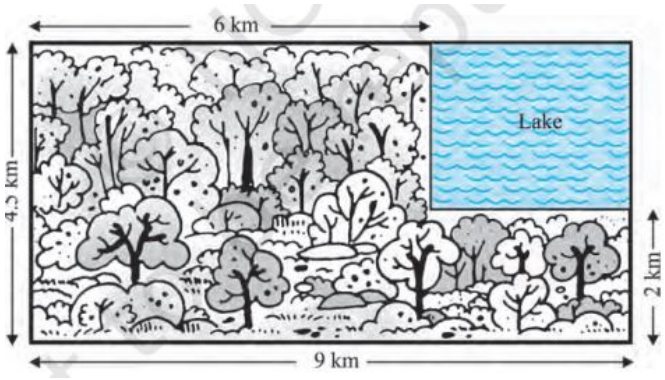

Fig. 0

2 Solution

The helicopter can fall at any point in the rectangular region with equal probability, i.e.,Uniform Distribution.
The total sample space Ω = total area of the rectangle = $9 * 4.5 = 40.5 km^2$
Favourable space = area of the lake = $3 * 2.5 = 7.5 km^2$

Probability that the helicopter crashed inside the lake

$$= \frac{area\ of\ the\ lake}{area\ of\ \Omega} \tag{2.0.1}$$

$$= \frac{7.5}{40.5} \tag{2.0.2}$$

$$= 0.1852 \tag{2.0.3}$$