

Assignment 3

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Download all python codes from

[https://github.com/Dishank422/AI1103-Probability
-and-random-variables/blob/main/
Assignment_3/codes](https://github.com/Dishank422/AI1103-Probability-and-random-variables/blob/main/Assignment_3/codes)

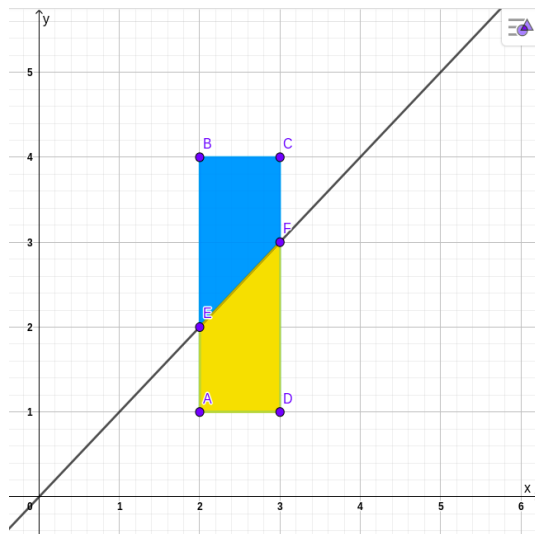
and latex-tikz codes from

[https://github.com/Dishank422/AI1103-Probability
-and-random-variables/blob/main/
Assignment_3/main.tex](https://github.com/Dishank422/AI1103-Probability-and-random-variables/blob/main/Assignment_3/main.tex)

1 PROBLEM

(Gate IN - 2021 Q.37) Consider that X and Y are independent continuous valued random variables with uniform PDF given by $X \sim U(2, 3)$ and $Y \sim U(1, 4)$. Then $\Pr(Y \leq X)$ is equal to

2 SOLUTION



In the above figure, rectangle ABCD represents sample space of (X, Y) . $Y \leq X$ for any point (X, Y) if and only if the point lies on or below line EF. Therefore

$$\Pr(Y \leq X) = \frac{\text{Area of AEFD}}{\text{Area of ABCD}} \quad (2.0.1)$$

$$= \frac{1}{2} \quad (2.0.2)$$