

Lecture-8

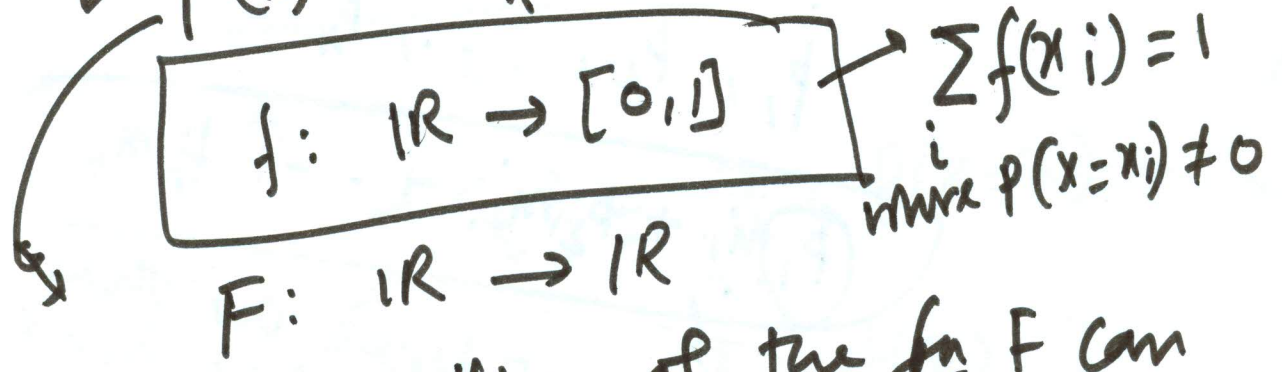
Probability & Statistics.

Discrete random variable (X)
→ PMF / prob. density function
→ PDF (probability distribution function)

$X: \Omega \rightarrow \mathbb{R}$
 $\{X(\omega) \mid \omega \in \Omega\}$ is finite / countably infinite

✓ $f(x) = P_X(x) = P(X=x)$

✓ $F(x) = F_X(x) = P(X \leq x)$



Q. what properties of the f or F can make it a PDF for a random variable X!

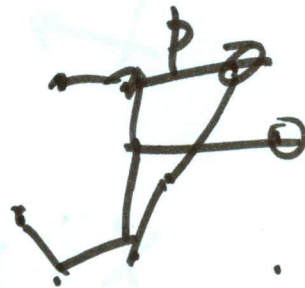
Obs. given f or F ,

any $x \in \mathbb{R}$ defines an event.

$$\{X \leq x\} = \{\omega \in \Omega \mid X(\omega) \leq x\}$$

$$\{X = x\} = \{\omega \in \Omega \mid X(\omega) = x\}$$

$$f(x) = P\{X = x\}$$



$$P(k_1 \leq X \leq k_2)$$

Wheel of fortune

m_1, m_2, \dots, m_n

p_1, p_2, \dots, p_n

$$p_1 m_1 + p_2 m_2 + \dots + p_n m_n$$

Can be considered as the expected value in any particular play.

