# ASSIGNMENT 5

MUSKAN JAISWAL -cs21btech11037

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# Outline

# Abstract


- This document contains the explanation of example 4.5 of Papoulis Pillai Probability book

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A telephone call occurs at random in the interval (0,1).In this experiment, the outcomes are time distances t between 0 and 1 and the probability that t is between t1 and t2 is given by

$P\{t1 \leq t \leq t2\} = t2 - t1$
Find the C.D.F of the given event.

Let the random variable x such that x(t)=t $0 \leq t \leq 1$. Here, t is the outcome of the experiment and also the corresponding value x(t) of the random variable x.

If $x > 1$, then $X(t) \leq x$ for every outcome. Hence

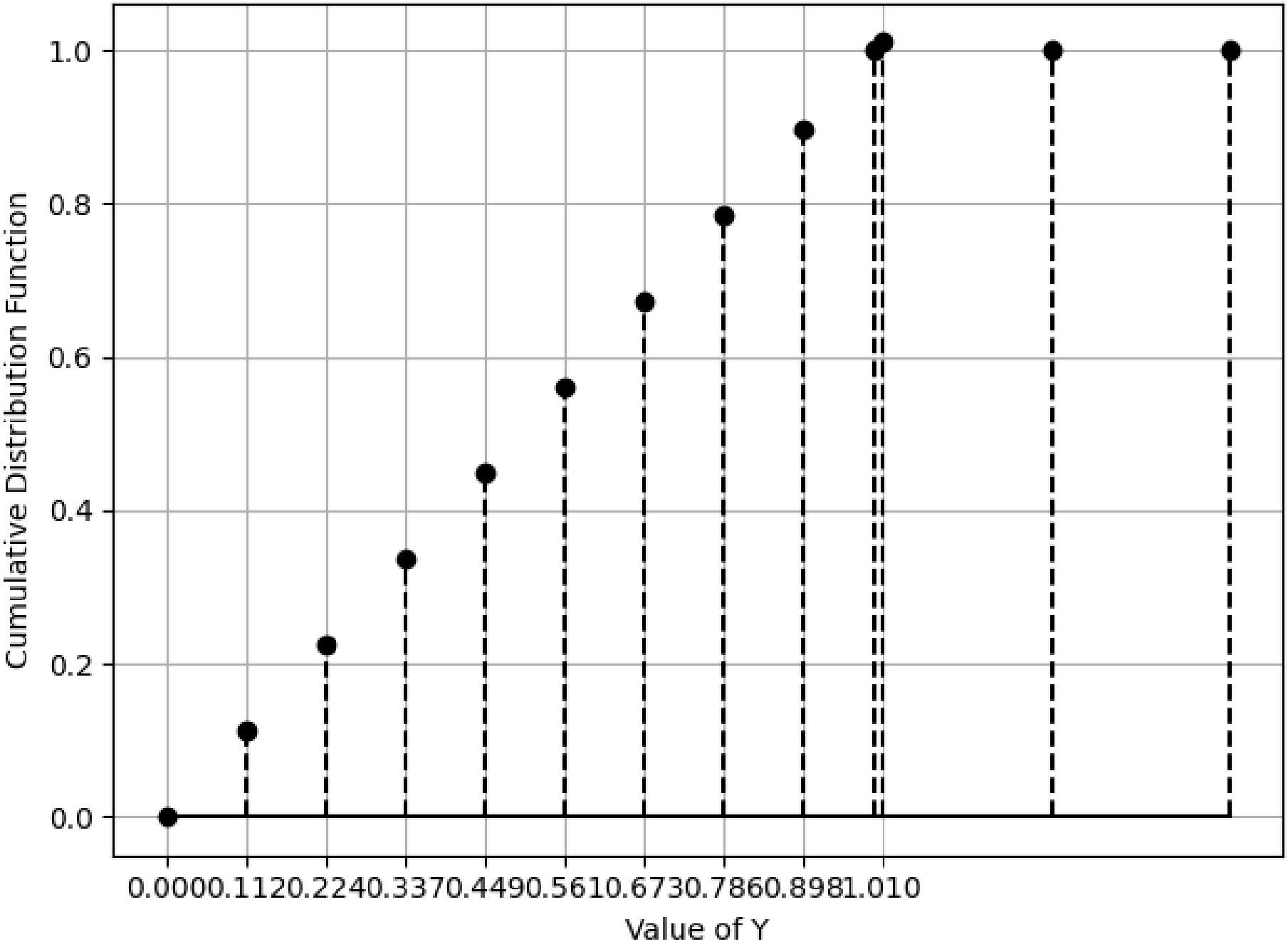
$F(x) = P\{X \leq x\} = P\{0 \leq t \leq 1\} = P(S) = 1$

If $0 \leq x \leq 1$, then $X(t) \leq x$, for t in (0,x). Hence

$F(x) = P\{X \leq x\} = P\{0 \leq t \leq x\} = x$

If $x < 0$, then $\{X \leq x\}$ is the impossible event because

$x(t) \geq 0, as 0 \leq t \leq 1$ Hence, $F(x) = P\{X \leq x\} = P\{\phi\} = 0$


Cumulative Distribution Function
1.0
0.8
0.6
0.4
0.2
0.0
0.000
0.112
0.224
0.337
0.449
0.561
0.673
0.786
0.898
1.010
Value of Y