

# AI1110

## Assignment 4

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# Outline

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## Example 4.8

Suppose the random variable  $x$  is such that  $X(\xi) = 1$  if  $\xi \in A$  and zero otherwise. Find  $F(x)$ .

# Solution

Given,

$$X(\xi) = \begin{cases} 1 & \text{if } \xi \in A \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

For  $x < 0$ ;

$$\{X(\xi) \leq x\} = \{\emptyset\} \quad (2)$$

$$\implies F(x) = 0 \quad (3)$$

For  $0 \leq x < 1$ ;

$$\{X(\xi) \leq x\} = \{\bar{A}\} \quad (4)$$

$$\implies F(x) = 1 - p = q \quad (5)$$

where  $p$  is  $P(A)$

For  $x \geq 1$ ;

$$\{X(\xi) \leq x\} = \{\Omega\} \quad (6)$$

$$\implies F(x) = 1 \quad (7)$$

# Answer

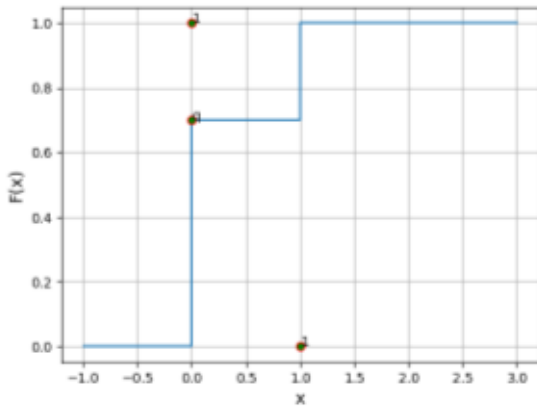


Figure 1: if  $p=0.3$