A sample space $S = \{a, b, c, d, e, f\}$ has equally likely outcomes. Define a random variable X by:

$$X(u) = \begin{cases} 1 & \text{if } u \in \{a, b, c\} \\ 3 & \text{if } u \in \{d, e\} \\ 100 & \text{if } u \in \{f\}. \end{cases}$$

and let F denote its cumulative distribution function (CDF). What is $F(\pi)$?

(a) 5/6

(b) 1/6

(c) 1/3

(d) 1/5

(e) 1/2

(f) 2/3

(g) 1/100

(h) 4

(i) 1

(j) 0

(k) None of these

Solution:
$F(\pi) = P(X \leq \pi) = 1 - P(X = 100) = 1 - (1/6) = 5/6.$