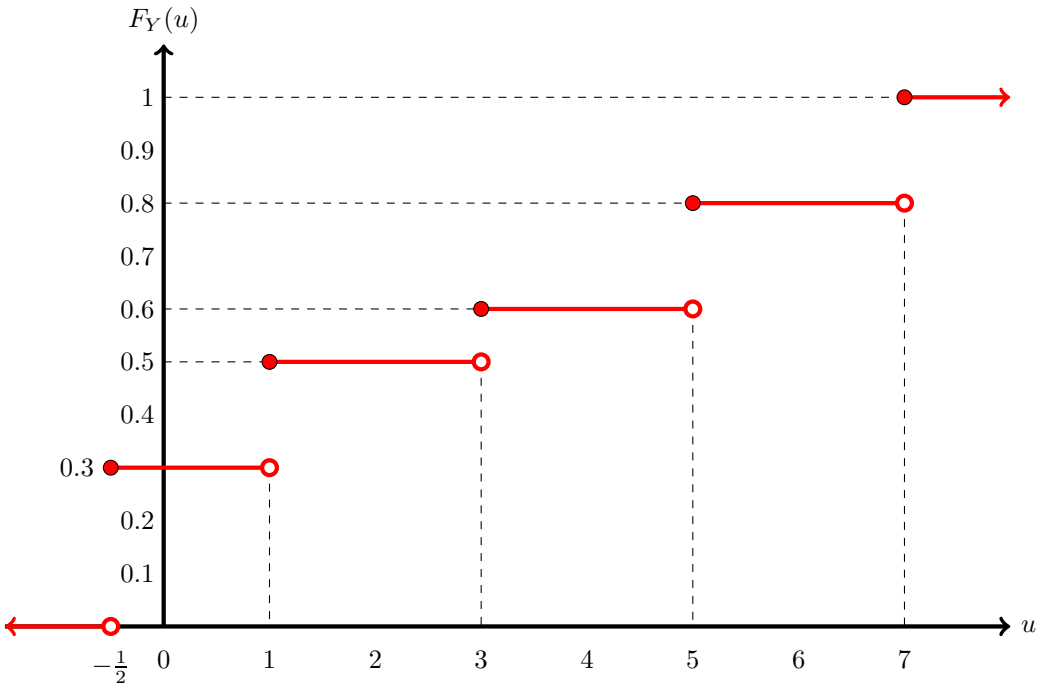
The cummulative distribution function of a random variable Y is shown below. What is the probability that Y lies in the set $[4,6) \cup (3,5) \cup (-\infty, 2] \cup (-1,3)$?



(a) 0.7

(b) 0.6

(c) 0.5

(d) 0.4

(e) 0.3

(f) 0.2

(g) 0.1

(h) 0.8

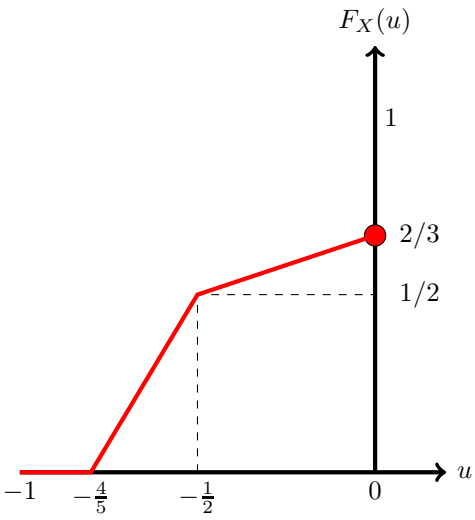
(i) 0.9

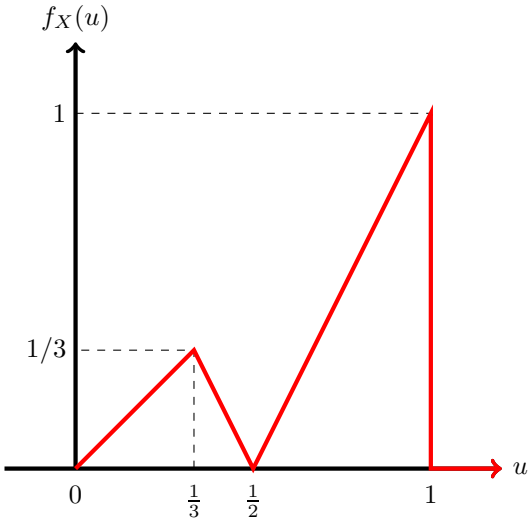
(j) 0

(k) 1

(l) None of these

A random variable X has a CDF $F_X(u)$ which is partially shown below in red (i.e. only when $u \leq 0$) and a pdf $f_X(u)$ which is partially shown below in red (i.e. only when $u > 0$). What is the CDF value $F_X(1/3)$?





(a) 13/18

(b) 1/18

(c) 3/4

(d) 1/4

(e) 1/2

(f) 5/6

(g) 1/6

(h) 1/12

(i) 3/8

(j) 2/3

(k) 7/9

(l) 1/3

(m) None of these

A random variable X with mean and variance both equal to one has probability density function $f(u)$. What is the value of $\int_{-\infty}^{\infty}(1-2u)(u+1)f(u)du$?

(a) -4

(b) -3

(c) -2

(d) -1

(e) 0

(f) 1

(g) 2

(h) 3

(i) 4

(j) 5

(k) 6

(l) None of these