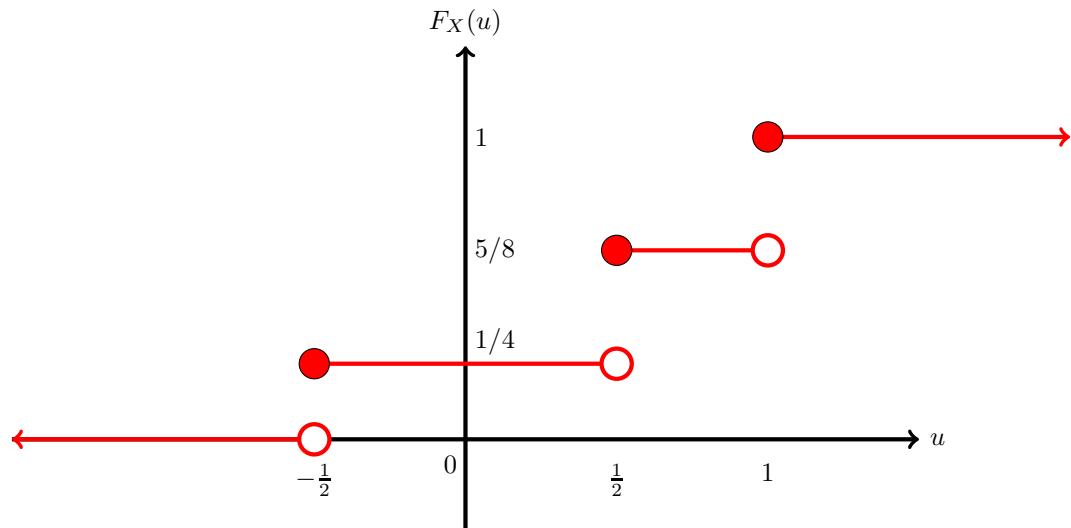


The cumulative distribution function of a random variable X is shown below. What is the probability that $-\frac{1}{2} \leq X \leq 1$?



- (a) None of these
- (b) $3/16$
- (c) $1/2$
- (d) $1/4$
- (e) $5/8$
- (f) $3/8$
- (g) $3/4$
- (h) $2/3$
- (i) $1/8$
- (j) $7/8$
- (k) 0
- (l) $1/16$

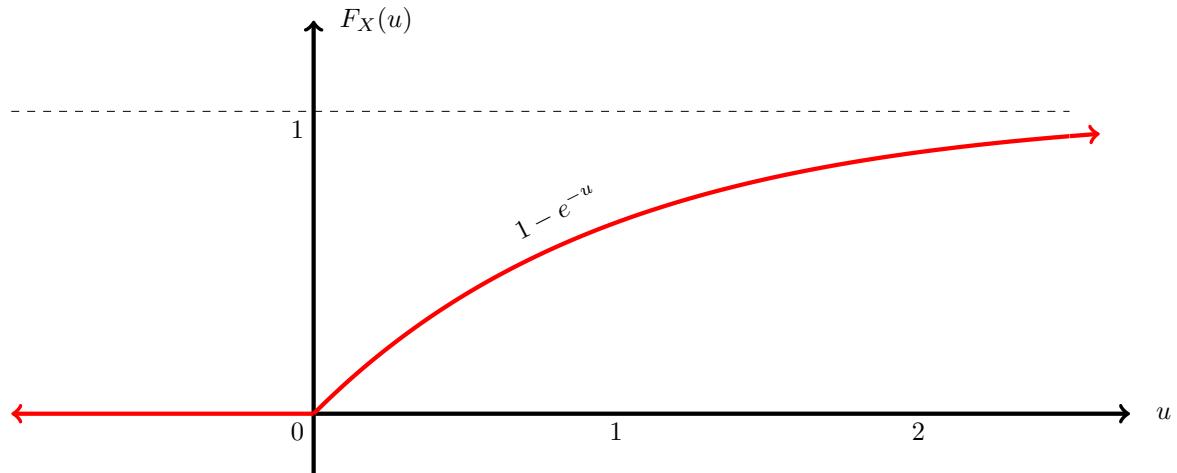
An experiment has sample space $S = \{a, b, c, d, e\}$ with probabilities $P(a) = P(c) = 1/8$ and $P(b) = P(d) = P(e) = 1/4$. Define random variables X and Y on S as follows:

$$\begin{array}{ll} X(a) = 0 & Y(a) = 1/8 \\ X(b) = 1/2 & Y(b) = 1/16 \\ X(c) = 1/4 & Y(c) = 0 \\ X(d) = 1/4 & Y(d) = 1/4 \\ X(e) = 1/8 & Y(e) = 1/8. \end{array}$$

What is the probability that $X = Y$ or $X < 0.2$ (or both) ?

- (a) 5/8
- (b) 1/16
- (c) 1/2
- (d) 1/4
- (e) 3/8
- (f) 3/4
- (g) 2/3
- (h) 1/8
- (i) 7/8
- (j) 0
- (k) 0.2
- (l) None of these

Let X be a random variable whose cumulative distribution function is shown below. What is the probability that e^X is greater than 1.5 ?



- (a) $2/3$
- (b) $1/3$
- (c) $1/e$
- (d) $(e - 1)/e$
- (e) $1/2$
- (f) $3/4$
- (g) $1/4$
- (h) $e/3$
- (i) $e/2$
- (j) $1/\ln 2$
- (k) $1/\ln 3$
- (l) None of these