

One piece of fruit is chosen randomly from a box containing 3 apples, 4 bananas, and 5 cherries. Each piece of fruit is equally likely. The random variables  $X$  and  $Y$  are defined as follows:

$$\begin{array}{ll} X(\text{apple}) = 0 & Y(\text{apple}) = 1 \\ X(\text{banana}) = 1 & Y(\text{banana}) = 1 \\ X(\text{cherry}) = -1 & Y(\text{cherry}) = 0 \end{array}$$

What is the value of the CDF difference  $F_X(\frac{\sqrt{2}}{2}) - F_Y(1)$ ?

- (a)  $-1/3$
- (b)  $1/3$
- (c)  $1/4$
- (d)  $-1/4$
- (e)  $5/12$
- (f)  $-5/12$
- (g)  $0$
- (h)  $1$
- (i)  $-1$
- (j)  $7/12$
- (k)  $3/4$
- (l)  $2/3$
- (m) None of these