Exercice 02 :

X	0	2	4
P_X	$\frac{21}{32}$	$\frac{6}{32}$	$\frac{5}{32}$

1) La Fonction de répartition.

$$F(x) = P\left(X \leq \sum_{i \in \Omega} x_i\right)$$

* Si $X < 0 \Rightarrow F(x) = 0$

* Si $0 \leq x < 2 \Rightarrow F(x) = P(X=0) = \frac{21}{32}$

* Si $2 \leq x < 4 \Rightarrow F(x) = P(X=0) + P(X=2)$

$$= \frac{21}{32} + \frac{6}{32} = \frac{27}{32}$$

* Si $4 \leq X \Rightarrow F(x) = P(X=0) + P(X=2) + P(X=4)$

$$= 1$$

2) $E(X) = \sum_{i=\overline{0,4}} x_i P_i = 0 \times \frac{21}{32} + 2 \times \frac{6}{32} + 4 \times \frac{5}{32}$

$$= \frac{12}{32} + \frac{20}{32} = \frac{32}{32} = \boxed{1}$$

* $Var(X) = E(X^2) - E(X)^2$

$$E(X^2) = \sum_{i=\overline{0,4}} x_i^2 \times P_i = 0 \times \frac{21}{32} + 4 \times \frac{6}{32} + 16 \times \frac{5}{32} = \frac{24}{32} + \frac{8}{3}$$

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