

حل السلسلة رقم 3

المسألة رقم 3

x_i	32	33	34	35	36
P_i	$\frac{9}{119}$	$\frac{10}{119}$	$\frac{42}{119}$	$\frac{20}{119}$	$\frac{38}{119}$

$$E(x) = 34,57$$

$$V(x) = 1,3$$

$$f(x) = \begin{cases} \frac{c}{x^2} & x=1,2,4 \\ 0 & \text{سواها} \end{cases}$$

$$\sum P(x=x_i) = 1$$

$$\sum_{i=1}^3 \frac{c}{x^2} = 1 \Rightarrow \frac{c}{1^2} + \frac{c}{4} + \frac{c}{16} = 1$$

$$\Rightarrow \boxed{c = \frac{16}{21}}$$

$$E(x) = \sum_{i=1}^3 x_i P(x=x_i)$$

$$= \sum_{i=1}^3 x_i \frac{16}{21 x_i^2}$$

$$= \frac{16}{21} \sum_{i=1}^3 \frac{1}{x_i}$$

$$= \frac{16}{21} \left[1 + \frac{1}{2} + \frac{1}{4} \right]$$

$$\boxed{E(x) = \frac{4}{3}}$$

Ex 1

$$Y = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$$

x	2	3	4	5	6	7	8	9	10	11	12
$P(x)$	$\frac{1}{36}$	$\frac{2}{36}$	$\frac{3}{36}$	$\frac{4}{36}$	$\frac{5}{36}$	$\frac{6}{36}$	$\frac{7}{36}$	$\frac{4}{36}$	$\frac{3}{36}$	$\frac{2}{36}$	$\frac{1}{36}$

$$E(x) = \sum x_i P_i = 7$$

$$V(x) = \sum x_i^2 P_i - E(x)^2 = 5,83$$

$$E(2x) = 2 E(x)$$

$$V(2x) = 2^2 V(x)$$

$$n = 10 + 7 + 20 = 37$$

$$P = \frac{2}{37}$$

Ex 2

$$P(A) = \frac{\text{card}(A)}{\text{card}(\Omega)}$$

$$C_{37}^2 = \text{card}(A) \quad \text{عدد الترتيبات}$$

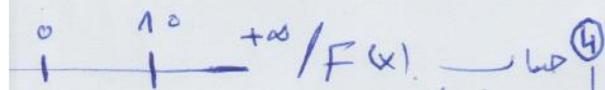
$$= \text{card}(A) \quad \text{عدد الترتيبات}$$

$$C_{37}^2 + C_{10}^1 \cdot C_{20}^1 = 210$$

$$P(A) = \frac{210}{595} = \boxed{0,35}$$

عدد الترتيبات

$$X = \{32, 33, 34, 35, 36\}$$



$$F(x) = P(X \leq x_i) = \int_0^x f(x) dx$$

$$x < 0 \Rightarrow F(x) = P(X \leq x) = \int_{-\infty}^x f(x) dx = 0$$

$$0 < x < 10 \Rightarrow \int_{-\infty}^0 f(x) dx + \int_0^x f(x) dx$$

$$\frac{3}{100} \left[5x^2 - \frac{x^3}{3} \right]_0^x$$

$$x > 10 \Rightarrow \int_{-\infty}^0 f(x) dx + \int_0^{10} f(x) dx + \int_{10}^x f(x) dx$$

$$\frac{3}{100} \left[\left(5(10)^2 - \frac{10^3}{3} \right) - 0 \right] = 1$$

F(x) is

$$f(x) = \begin{cases} 0 & x < 0 \\ \frac{3}{100} \left[5x^2 - \frac{x^3}{3} \right] & 0 \leq x \leq 10 \\ 1 & x > 10 \end{cases}$$

$$S(x) = 2,23 \quad CV = 44,72\%$$

$$f(x) = \begin{cases} 2(x-2) & 2 \leq x \leq 3 \\ 0 & \text{siman} \end{cases}$$

$$P\left(x \leq \frac{7}{2}\right) = \frac{3}{4}$$

$$P\left(x \leq \frac{5}{2}\right) = \frac{1}{4}$$

$$P\left(\frac{5}{2} \leq x \leq 3\right) = \frac{3}{4}$$

Ex 4
 $f(x) = \begin{cases} cx(10-x), & 0 \leq x < 10 \\ 0 & \text{siman} \end{cases}$ ①

$$\int_0^{10} f(x) dx = 1$$

$$c \int_0^{10} (10x - x^2) dx = 1$$

$$\Rightarrow c = \frac{3}{100}$$

$$P(5 \leq x \leq 8) = \int_5^8 \frac{3}{100} x(10-x) dx$$

$$= \frac{3}{100} (66) = 0,39$$

$$\bar{c} \text{ mi } 600 = x_i : \text{ isal } ③$$

$$P(x < 3) \cdot x_i = \text{misal } 25$$

$$P(x < 3) \times 600 =$$

$$\text{misal } 25 = 600 \times \int_0^3 f(x) dx$$

$$= 600 \int_0^3 \frac{3}{100} (10x - x^2) dx$$

$$= 3,6 \left[5x^2 - \frac{x^3}{3} \right]_0^3$$

$$= 129,6 \approx 130 \text{ misal}$$

