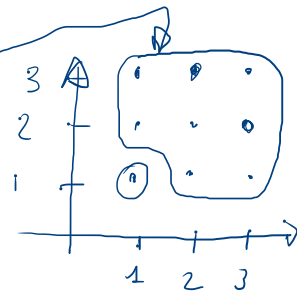


ESERCIZIO

Consideriamo la seguente densità congiunta:

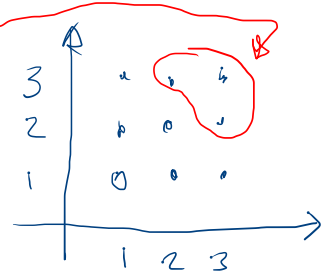
$$P_{\underline{X}}(x_1, x_2) = \begin{cases} 2/10 & \text{per } x_1 = x_2 = 1 \\ 1/10 & \text{per } (x_1, x_2) \in \end{cases}$$



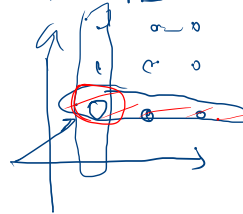
- 1) Calcolare $P(X_1 + X_2 \geq 5)$
- 2) Calcolare $P(X_1 = 1 \mid X_2 = 1)$
- 3) Calcolare $P(X_1 = X_2 \mid X_1 + X_2 \geq 5)$

$$1) P(X_1 + X_2 \geq 5) = \sum_{\substack{x_i \\ x_1 + x_2 \geq 5}} P_X(x_1, x_2) =$$

$$= P_X(3, 2) + P_X(2, 3) + P_X(3, 3) = \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \frac{3}{10}$$



$$2) P(X_1 = 1 | X_2 = 1) = \frac{P(\{X_1 = 1\} \cap \{X_2 = 1\})}{P(X_2 = 1)} = \frac{P_X(1, 1)}{P_X(1, 1) + P_X(2, 1) + P_X(3, 1)} = \frac{\frac{2}{10}}{\frac{2}{10} + \frac{1}{10} + \frac{1}{10}} = \frac{2}{2+1+1} = \frac{2}{4} = \frac{1}{2}$$



$$3) P(X_1 = X_2 | X_1 + X_2 \geq 5) = \frac{P(\overset{A}{\{X_1 = X_2\}} \cap \overset{B}{\{X_1 + X_2 \geq 5\}})}{P(X_1 + X_2 \geq 5)} =$$

$$= \frac{P_X(3,3)}{3/10} =$$

$$= \frac{1/10}{3/10} = \frac{1}{3}$$

↙
Calcolato
nella 1^a
domanda

