

Corrigé de l'examen

Exercice N° 1.

$$1. \text{ on a : } P(A \cap B) = P(A) + P(B) - P(A \cup B) = 0,05$$

$$P(A^c \cap B) = P(B) - P(A \cap B) = 0,35$$

$$P(A \cap B^c) = P(A) - P(A \cap B) = 0,25$$

$$2. P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{0,05}{0,4} = 0,125$$

$$P(B|A) = \frac{P(A \cap B)}{P(A)} = \frac{0,05}{0,3} = 0,1\bar{6}$$

$$3. P(A|A \cup B) = \frac{P(A)}{P(A \cup B)} = \frac{0,3}{0,65}$$

$$P(B|A \cap B) = \frac{P(A \cap B)}{P(A \cap B)} = 1$$

$$4. P(A^c|B) = \frac{P(A^c \cap B)}{P(B)} = \frac{0,35}{0,40}$$

$$P(B|A^c) = \frac{P(B \cap A^c)}{P(A^c)} = \frac{0,35}{1-0,3} = \frac{0,35}{0,7}$$

$$5. P(B^c|B) = 0 = P(B|B^c).$$

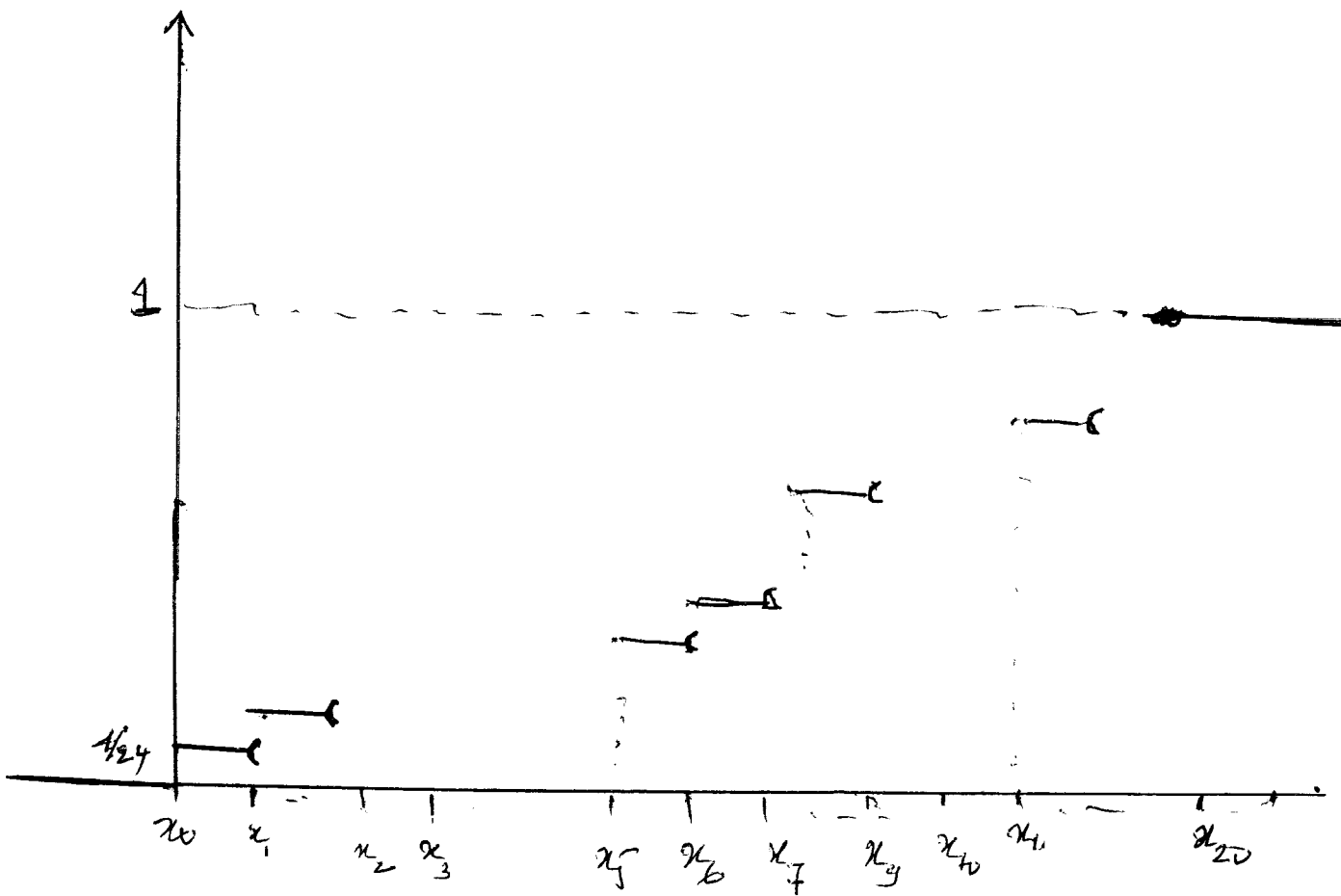
Exercice N° 2:

1/ On a:

	x_0, \dots, x_3	x_4, \dots, x_6	x_7, \dots, x_{10}	x_{11}, \dots, x_{20}
P_h :	$\frac{1}{24}$	$\frac{1}{9}$	$\frac{1}{24}$	$\frac{1}{30}$

Donc

x	$F_x(x)$
$x \in]-\infty, 0[$	0
$x \in [0, \frac{3}{10}[$	$\frac{1}{24}$
$x \in [\frac{3}{10}, \frac{9}{10}[$	$\frac{3}{24}$
$x \in [\frac{9}{10}, \frac{12}{10}[$	$\frac{3}{24} + \frac{1}{9}$
$x \in [\frac{12}{10}, \frac{15}{10}[$	$\frac{3}{24} + \frac{3}{9}$
$x \in [\frac{15}{10}, \frac{21}{10}[$	$\frac{4}{24} + \frac{3}{9}$
$x \in [\frac{21}{10}, \frac{30}{10}[$	$\frac{6}{24} + \frac{3}{9}$
$x \in [\frac{30}{10}, \frac{33}{10}[$	$\frac{6}{24} + \frac{3}{9} + \frac{1}{30}$
$x \in [\frac{33}{10}, \infty[$	$\frac{6}{24} + \frac{3}{9} + \frac{9}{30}$
$x \geq 6$	1



2. Les probabilités:

$$P(0 \leq X \leq 2) = F_X(2) - F_X(0)$$

$$P(1 \leq X \leq 3) = F_X(3) - F_X(1)$$

$$\text{Donc: } P(0 \leq X \leq 2) = P(X \leq 2)$$

$$= P(X = x_0, x_1, x_2, x_3, x_4, x_5, x_6)$$

et

$$= P_0 + P_1 + P_2 + P_3 + P_4 + P_5 + P_6$$

$$= \frac{1}{24} + \frac{1}{24} + \frac{1}{24} + \frac{1}{24} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} = \frac{4}{24} + \frac{3}{9} = \frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$$

3) La moyenne et la variance sont des concepts faciles et simples.