

Lois de probabilités

Exercices page 6.

1	X = x _i	0	1	2	3
	p _i = P(X = x _i)	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$
	x _i · p _i	0	$\frac{3}{8}$	$\frac{6}{8}$	$\frac{3}{8}$
	x _i ² · p _i	0	$\frac{3}{8}$	$\frac{12}{8}$	$\frac{3}{8}$

$$E(X) = \frac{2}{8} + \frac{6}{8} + \frac{3}{8} = \frac{12}{8} = \frac{3}{2}$$

$$V(X) = E(X^2) - E(X)^2 = \frac{3}{8} + \frac{12}{8} + \frac{3}{8} - \frac{9}{4} = \frac{24}{8} - \frac{9}{4} = \frac{6}{8} = \frac{3}{4}$$

$$G(X) = \sqrt{\frac{3}{4}}$$

2.	X = x _i	0	1	2	3	
	p _i = P(X = x _i)	$\frac{3}{64}$	$\frac{1}{4} \cdot \frac{3}{4}$	$\frac{3}{16} \cdot \frac{1}{4}$	$\frac{1}{4} \cdot \frac{1}{4}$	E(X) = $\frac{3}{12} = \frac{1}{4}$ P(X=0) = $\frac{3}{4}$
		$\frac{27}{64}$	$\frac{27}{64}$	$\frac{9}{64}$	$\frac{1}{64}$	
	x _i · p _i	0	$\frac{27}{64}$	$\frac{12}{64}$	$\frac{3}{64}$	
	x _i ² · p _i	0	$\frac{27}{64}$	$\frac{36}{64}$	$\frac{3}{64}$	

$$E(X) = \frac{42}{64} = \frac{3}{4}$$

$$V(X) = \frac{72}{64} - \frac{9}{16} = \frac{36}{64} = \frac{9}{16}$$

3.	X = x _i	-0,5	0	1	5	
	p _i = P(X = x _i)	$\frac{1}{6}$	$\frac{2}{6}$	$\frac{2}{6}$	$\frac{1}{6}$	E(X) = $\frac{13}{12}$
	x _i · p _i	$-\frac{1}{12}$	0	$\frac{2}{6}$	$\frac{5}{6}$	V(X) = $\frac{37}{36}$
	x _i ² · p _i	$\frac{1}{24}$	0	$\frac{2}{6}$	$\frac{25}{6}$	G(X) = $\frac{1}{81}$