PAGINA 1 - EJERCICIO 4

X = " NUMERO DE SECAS 4 TIRADAS "

Y = " DIFERENCIA EN EL VALOR ABSOLUTO DE CARAS Y SECAS "

- NÚMERO DE SECAS EN 4 TIRADAS ... $S = \{0, 1, 2, 3, 4\}$
- $S = 4 - C$
- CARAS = 4 $\quad y = |C - S| \Rightarrow y = |C - (4-C)|$

$$\Rightarrow y = |2C - 4|$$

VALORES POSIBLES DE Y:

$P(C=0) = |2.(0) - 4| = 4$

$P(C=1) = |2.(1) - 4| = 2$

$P(C=2) = |2.(2) - 4| = 0$

$P(C=3) = |2.(3) - 4| = 2$

$P(C=4) = |2.(4) - 4| = 4$

VALORES POSIBLES DE X e Y:

SI $X=0$; $Y=4$

SI $X=1$; $Y=2$

SI $X=2$; $Y=0$

SI $X=3$; $Y=2$

SI $X=4$; $Y=4$

DISTRIBUCIÓN DE PROBABILIDAD.

x \ y	0	2	4	P(x)
0	0	0	1/16	1/16
1	0	1/4	0	1/4
2	1/4	0	0	1/4
3	0	1/4	0	1/4
4	0	0	1/16	1/16
P(y)	1/4	1/2	1/8	

$E(x) = 0 \cdot 1/16 + 1 \cdot 1/4 + 2 \cdot 1/4 + 3 \cdot 1/4 + 4 \cdot 1/16 = 7/4 = 1,75$

$E(y) = 0 \cdot 1/4 + 2 \cdot 1/2 + 4 \cdot 1/8 = 3/2 = 1,5$

$E(x^2) = 0^2 \cdot 1/16 + 1^2 \cdot 1/4 + 2^2 \cdot 1/4 + 3^2 \cdot 1/4 + 4^2 \cdot 1/16 = 9/2 = 4,5$

$E(y^2) = 0^2 \cdot 1/4 + 2^2 \cdot 1/2 + 4^2 \cdot 1/8 = 4$

$E(x \cdot y) = 0 \cdot 4 \cdot 1/16 + 1 \cdot 2 \cdot 1/4 + 2 \cdot 0 \cdot 1/4 + 3 \cdot 2 \cdot 1/4 + 4 \cdot 4 \cdot 1/16 = 3$

$V(x) = 9/2 - (7/4)^2 = 23/16$ $\quad D(x) = \sqrt{23/16} = 1,198$

$V(y) = 4 - (3/2)^2 = 7/4$ $\quad D(y) = \sqrt{7/4} = 1,3228$

$Cov(x,y) = 3 - (1,75 \times 1,5) = 0,375$

$$r = \frac{0,375}{\sqrt{23/16 \times 7/4}} = 0,2364 \qquad r^2 = 0,2364 = 0,055$$

(D) - SON INDEPENDIENTES

$P(x=3, y=2) = P(x=2) \cdot P(y=2)$

$1/4 = 1/4 \cdot 1/2$

$1/4 \neq 1/8$ NO SON INDEPENDIENTES

(E) $P(x \leq 1, y > 0) = P(x=1, y=2) = 1/4$

$P(x < 1) = P(x=0, y=4) = 1/16$