

**Práctico 5: Distribución conjunta**

1.
  - a)  $P(X \geq 3) = 3/5$ .
  - b)  $P(X = Y) = 1/4$ .
  - c)  $P(XY = 6) = 1/8$ .
  - d)  $P(1 \leq X \leq 2, 2 < Y \leq 4) = 1/4$ .
  - e)  $X$  e  $Y$  no son independientes.
2.
  - a)  $P(S = 0) = P(S = 2) = 1/4, P(S = 1) = 1/2$ .  
 $P(T = -1) = P(T = 1) = 1/4, P(T = 0) = 1/2$ .
  - b)  $P(S = 0, T = 0) = P(S = 1, T = -1) = P(S = 1, T = 1) = P(S = 2, T = 0) = 1/4$ .
  - c)  $S$  y  $T$  no son independientes.
  - d)  $E(ST) = 0$ .
3.
  - a)  $P(X^2 + Y^2 \leq 1) = \pi/4$ .
  - b)
4.
  - a)  $c = 2/243$ .
  - b)  $P(1 \leq X \leq 2, 0 \leq Y \leq 1) = 35/2187$ .
  - c)  $F_X(t) = \begin{cases} 0 & \text{si } t < 0 \\ \frac{t^3}{27} & \text{si } t \in [0, 3] \\ 1 & \text{si } t > 3 \end{cases}$
  - d)  $f_X(t) = \begin{cases} \frac{t^2}{9} & \text{si } t \in [0, 3] \\ 0 & \text{en otro caso} \end{cases}$
  - e)  $X$  e  $Y$  son independientes.