

$$7.10) P(D=d) = C \frac{2^d}{d!}, \quad d = 1, 2, 3, 4$$

a) $C = ?$

$$\sum_{d=1}^4 p(d_i) = 1 \Rightarrow C \left[\frac{2^1}{1!} + \frac{2^2}{2!} + \frac{2^3}{3!} + \frac{2^4}{4!} \right] = 1$$

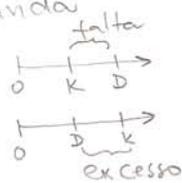
$$C \left[2 + 2 + \frac{4}{3} + \frac{2}{3} \right] = 1 \Rightarrow C = \frac{3}{18} = \frac{1}{6}$$

b) $E(D) = \sum_{d=1}^4 d_i p(d_i)$

$$\frac{1}{6} \left[1 \cdot 2 + 2 \cdot 2 + 3 \cdot \frac{4}{3} + 4 \cdot \frac{2}{3} \right] = \frac{1}{6} \left[\frac{18+12+8}{3} \right] = \frac{38}{18} = \frac{19}{9}$$

c) $T \rightarrow$ lucro ; $K \rightarrow$ produção ; $D \rightarrow$ demanda

$$T = \begin{cases} 5K, & \text{se } D > K \\ 5D - 3(K-D), & \text{se } D \leq K \end{cases}$$



	D	1	2	3	4
$K=0$	$p(d_i)$	$3/9$	$3/9$	$2/9$	$1/9$
	L	0	0	0	0
$K=1$	$p(l_i)$	1			
	L	5	5	5	5
$K=2$	$p(l_i)$	1			
	L	$(5+1-3+1) = 2$	$(5+2) = 10$	$(5+2) = 10$	$(5+2) = 10$
$K=3$	$p(l_i)$	$3/9$	$\frac{3+2+1}{9} = \frac{6}{9}$		
	L	$(5+1-3+2) = -1$	$(5+2-3+1) = 7$	$(5+3) = 15$	$(5+3) = 15$
	$p(l_i)$	$3/9$	$3/9$	$\frac{2+1}{9} = 3/9$	

$$E(L|K=0) = 1 \cdot 0 = 0$$

$$E(L|K=1) = 1 \cdot 5 = 5$$

$$E(L|K=2) = 2 \cdot \frac{3}{9} + 10 \cdot \frac{6}{9} = 7,3$$

$$E(L|K=3) = (-1) \cdot \frac{3}{9} + 7 \cdot \frac{3}{9} + 15 \cdot \frac{3}{9} = 7$$

$K=4$ deve ter $E(L|K=4) < E(L|K=3)$, pois L vai decreasing quando K aumenta.

K ÓTIMO :

$$E(L|K=2) = 7,3$$