Lucas Coelho Raupp

8) a)

u_1	u_2	u_3	$p_{u_1,u_2,u_3}(u)$	$X=u_1+u_2+u_3$	$Y=u_1+u_2-u_3$
0	0	0	1/27	0	0
0	0	1	1/27	1	-1
0	0	2	1/27	2	-2
0	1	0	1/27	1	1
0	1	1	1/27	2	0
0	1	2	1/27	3	-1
0	2	0	1/27	2	2
0	2	1	1/27	3	1
0	2	2	1/27	4	0
1	0	0	1/27	1	1
1	0	1	1/27	2	0
1	0	2	1/27	3	-1
1	1	0	1/27	2	2
1	1	1	1/27	3	1
1	1	2	1/27	4	0
1	2	0	1/27	3	3
1	2	1	1/27	4	2
1	2	2	1/27	5	1
2	0	0	1/27	2	2
2	0	1	1/27	3	1
2	0	2	1/27	4	0
2	1	0	1/27	3	3
2	1	1	1/27	4	2
2	1	2	1/27	5	1
2	2	0	1/27	4	4
2	2	1	1/27	5	3
2	2	2	1/27	6	2

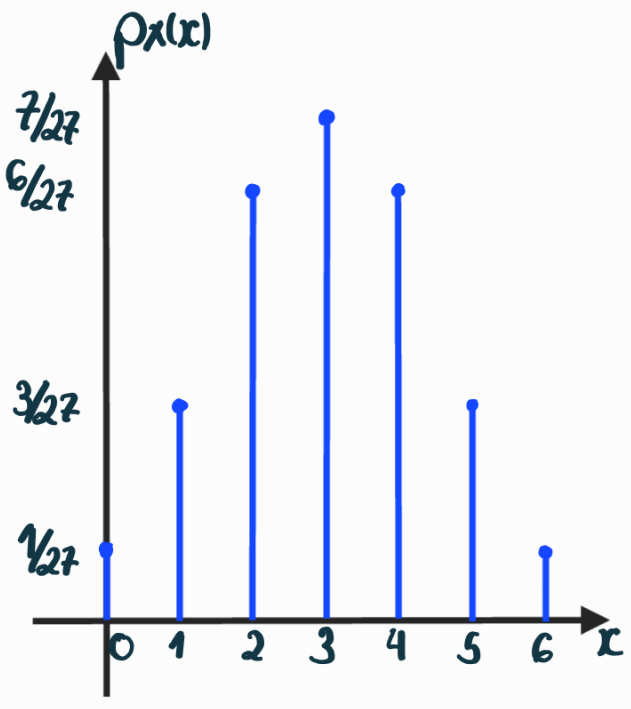
$p_{U_1,U_2,U_3}(u)$

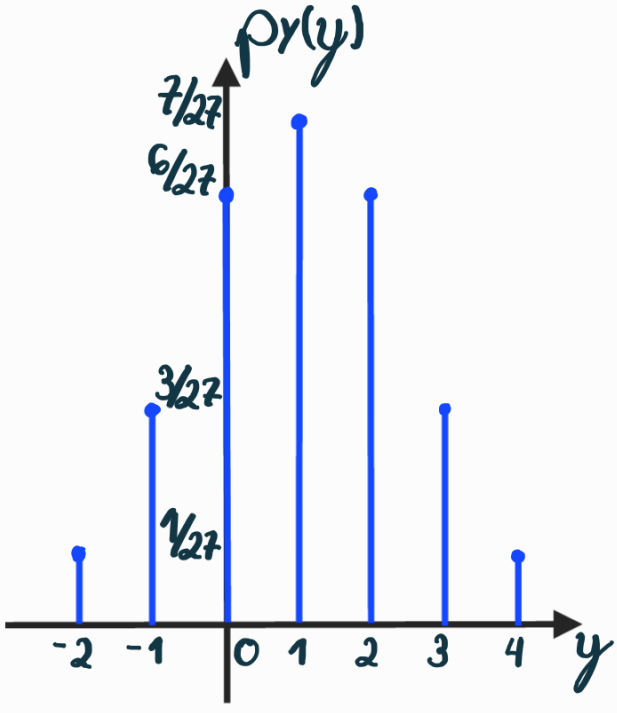
X \ Y	-2	-1	0	1	2	3	4
0	0	0	1/27	0	0	0	0
1	0	1/27	0	2/27	0	0	0
2	1/27	0	2/27	0	3/27	0	0
3	0	2/27	0	3/27	0	2/27	0
4	0	0	3/27	0	2/27	0	1/27
5	0	0	0	2/27	0	1/27	0
6	0	0	0	0	1/27	0	0

b)

$p_{U_1,U_2,U_3}(u)$

X \ Y	-2	-1	0	1	2	3	4	$p_X(x)$
0	0	0	1/27	0	0	0	0	1/27
1	0	1/27	0	2/27	0	0	0	3/27
2	1/27	0	2/27	0	3/27	0	0	6/27
3	0	2/27	0	3/27	0	2/27	0	7/27
4	0	0	3/27	0	2/27	0	1/27	6/27
5	0	0	0	2/27	0	1/27	0	3/27
6	0	0	0	0	1/27	0	0	1/27
$p_Y(y)$	1/27	3/27	6/27	7/27	6/27	3/27	1/27	1





c)

$$p_X(x/Y=-2) = \frac{p_{X,Y}(x,-2)}{1/27} \qquad p_X(x/Y=1) = \frac{p_{X,Y}(x,1)}{7/27}$$

	$x=0$	$x=1$	$x=2$	$x=3$	$x=4$	$x=5$	$x=6$
$p_X(x/Y=-2)$	0	0	1	0	0	0	0
$p_X(x/Y=1)$	0	$\frac{2}{7}$	0	$\frac{3}{7}$	0	$\frac{2}{7}$	0