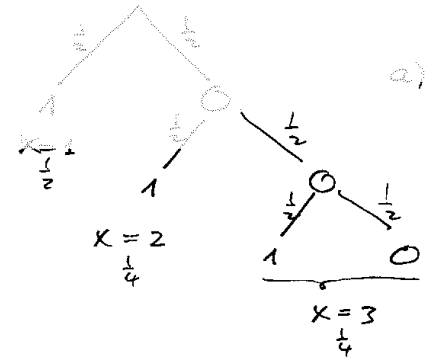
(1)



a)

x_i	1	2	3
p_i	1/2	1/4	1/4

b) $E(X) = 1 \cdot \frac{1}{2} + 2 \cdot \frac{1}{4} + 3 \cdot \frac{1}{4}$

$= 1.75$

c) Zahlung des Spielers Y

$X = x_i$	1	1	1	0
$Y = y_i$	a	a	a	-10
p_i	1/2	1/4	1/8	1/8

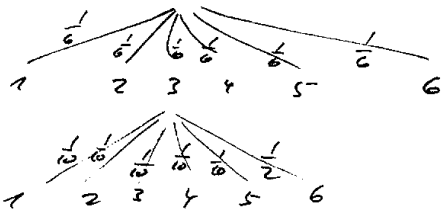
$E(Y) = a \cdot \frac{1}{2} + a \cdot \frac{1}{4} + a \cdot \frac{1}{8} - 10 \cdot \frac{1}{8} = \frac{7}{8} a - 10 \frac{1}{8}$

Red. $E(Y) = 12$ (= Gewinn des Spielbanks)

$\Rightarrow \frac{7}{8} a = \frac{10}{8} + 12 = 1.25 + 2 = 13.25$

$a = \frac{8}{7} \cdot 13.25 = \frac{26}{7}$

(2)



60 Würfen

x_i \ y_i	1	2	3	4	5	6	
1	1/60	1/60	1/60	1/60	1/60	1/12	1/6
2						1/12	1/6
3						1/12	1/6
4						1/12	1/6
5						1/12	1/6
6	1/60	1/60	1/60	1/60	1/60	1/12	1/6
	1/6	1/6	1/6	1/6	1/6	1/2	

Differenz

x_i \ y_i	1	2	3	4	5	6
1	0	1	2	3	4	5
2	1	0	1	2	3	4
3	2	1	0	1	2	3
4	3	2	1	0	1	2
5	4	3	2	1	0	1
6	5	4	3	2	1	0

$D = d_i$	0	1	2	3	4	5
p_i	10/60	14/60	12/60	10/60	8/60	6/60

(4) a) $1000 \cdot (-1) + 2000 \cdot b = 0 \Rightarrow b = -\frac{1}{2}$

b) $\frac{1}{\sqrt{3000}} \sqrt{1000 (-1-0)^2 + 2000 \left(-\frac{1}{2} - 0\right)^2} = \sqrt{\frac{1000 + 500}{3000}}$

$= \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = 0.71$