X, $S = \{1 \dots 6\}$

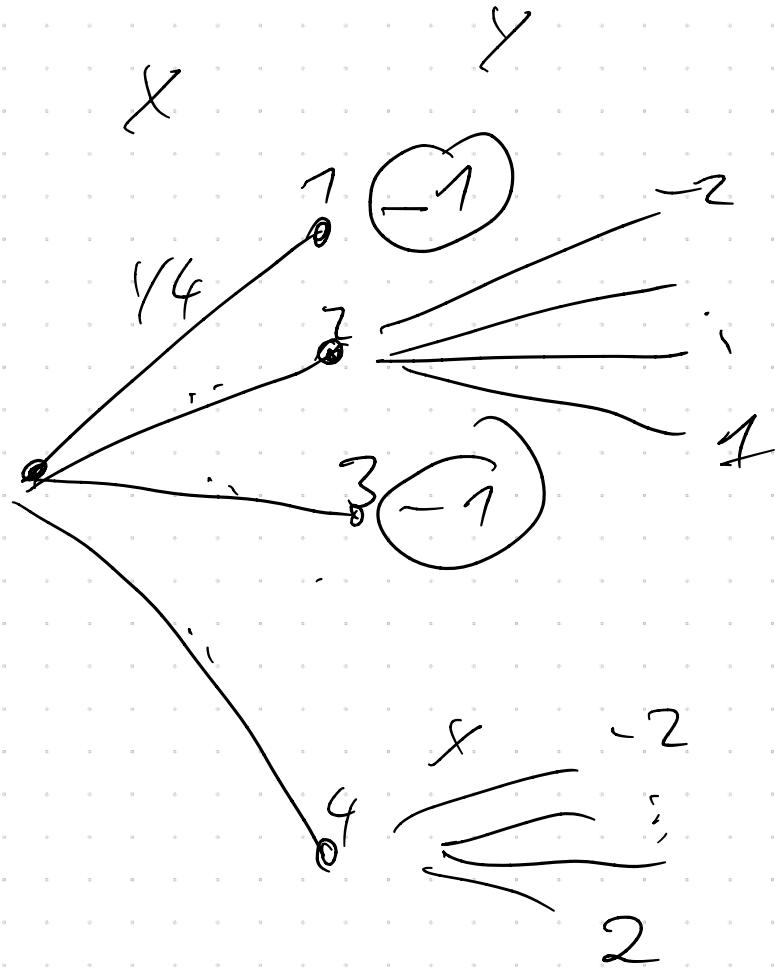
$$\mathbb{E}X = \sum_{k=1}^{6} k \cdot p(X=k)$$

$E = 0$

Loop over S (k):

$E \mathrel{+}= k \cdot p(X=k)$

Return E



$P(\cdot) = P(X=2) \cdot P(Y=-2)$

$E = 0$

For i in $\{1 \dots n\}$:

if i is odd:

$E \mathrel{+}= -1 \cdot P(X=i)$

else

for j in $\{-2 \dots \frac{i}{2}\}$:

$E \mathrel{+}= j \cdot P(Y=X) \cdot P(X=i)$

$X_i \sim X$ i.i.d.

$$\mathbb{E}X \approx \frac{1}{n}\cdot(x_1 + x_2 + \dots x_n)$$

$$\frac{1}{n}(X_1 + \dots + X_n) \longrightarrow N\left(\mathbb{E}X, \frac{1}{\sqrt{n}}\cdot C\right)$$

$\vec{X} = [\,]$

For i in $\{0 \dots (n-1)\}$:

$\vec{X}[i] = \text{sample } X()$

$E = \frac{1}{n} \cdot \text{sum}(\vec{X})$

$$S = \{0, \dots n-1\}$$

$$A = \{\text{"Left"}, \text{"Right"}\}$$

$$\cong \{-1, +1\}$$

$$R = \{0, 1\}$$

$$P: p(s'|s,a) = \begin{cases} 1 & s=0,\ s'=1 \\ 1 & s=n-1,\ s'=n-1 \\ 1 & a=\text{"R"},\ s'=s+1 \\ 1 & a=\text{"L"},\ s'=s-1 \\ 0 & \text{else} \end{cases}$$

$$p(r|s,a) = \begin{cases} 1 & s=1,\ a=\text{"L"} \\ 1 & s=n-2,\ a=\text{"R"} \\ 0 & \text{else} \end{cases}$$

$$f(s,a) = s'$$

$$f(s,a) = \begin{cases} 1 & s = 0 \\ n-2 & s = n-1 \\ s+1 & a = \text{"R"} \\ s-1 & a = \text{"L"} \end{cases}$$

$$p(f(s,a) \mid s,a) = 1$$

$$p(\quad \ldots \quad (s,a) = 0$$