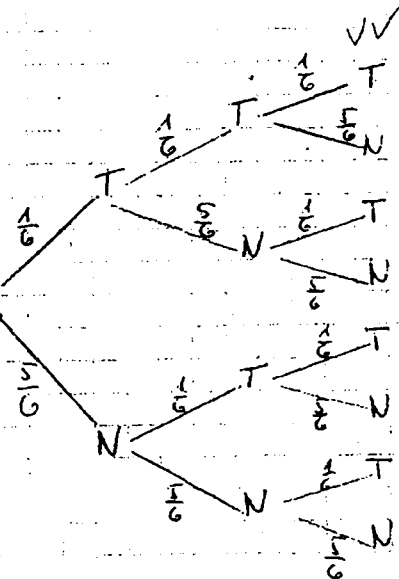


2.1.



$$P(TTT) = \frac{1}{216}$$

$$P(TTN) = \frac{5}{216}$$

$$P(TNT) = \frac{5}{216} \quad VV$$

$$P(TNN) = \frac{25}{216}$$

$$P(NTT) = \frac{5}{216}$$

$$P(NTN) = \frac{25}{216}$$

$$P(NNT) = \frac{25}{216}$$

$$P(NNN) = \frac{125}{216}$$

$$P(X=1) = 3 \cdot \frac{25}{216} \quad \checkmark \quad P(X=2) = 3 \cdot \frac{5}{216} \quad \checkmark$$

X	-1	1	2	3
P(X=x)	$\frac{125}{216}$	$\frac{75}{216}$	$\frac{15}{216}$	$\frac{1}{216}$

6

$$2.2 \quad P(X \geq 2) = \frac{15}{216} + \frac{1}{216} = \frac{16}{216} \quad VV$$

2

$$2.3 \quad E(X) = -1 \cdot \frac{125}{216} + 1 \cdot \frac{75}{216} + 2 \cdot \frac{15}{216} + 3 \cdot \frac{1}{216} = -\frac{17}{216} \approx -0.08 \quad \checkmark \quad 2$$

E verliert! X

$$2.4 \quad \text{Var}(X) = 1 \cdot \frac{125}{216} + 1 \cdot \frac{75}{216} + 4 \cdot \frac{15}{216} + 9 \cdot \frac{1}{216} - \left(\frac{17}{216}\right)^2 = 1,239 \quad \checkmark$$

2

$$\sigma = \sqrt{\text{Var}(X)} = 1,113 \quad \checkmark$$

$$4.1) \quad \binom{20}{8} = 125970 \quad VV$$

2

$$4.2) \quad |S| = 4 \cdot 3 \cdot 2 \cdot 1 = 24 \quad \checkmark$$

$$|E| = 4 \cdot 1 \cdot 2 \cdot 1 = 8 \quad \checkmark$$

$$P(E) = \frac{8}{24} = \frac{1}{3} \quad \checkmark$$

3