

P. 6

H: 表 T: 裏

① 標本空間 $\{HH, HT, TH, TT\}$

根元事象 HH, HT, TH, TT の4つ

② $\{HT\}$

③ $\{HH, HT, TH\}$

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① $P(\{HT\}) = \frac{1}{4}$

② $P(\{HH, TH\}) = \frac{2}{4} = \frac{1}{2}$

③ $P(\{HH, HT, TH\}) = \frac{3}{4}$

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① $X(\square) = \frac{1}{2}$, $X(\begin{smallmatrix} \square \\ \cdot \end{smallmatrix}) = \frac{2}{2} = 1$, $X(\begin{smallmatrix} \square \\ \cdot \\ \cdot \end{smallmatrix}) = \frac{3}{2}$
 $X(\begin{smallmatrix} \square \\ \cdot \\ \cdot \\ \cdot \end{smallmatrix}) = \frac{4}{2} = 2$, $X(\begin{smallmatrix} \square \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{smallmatrix}) = \frac{5}{2}$, $X(\begin{smallmatrix} \square \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{smallmatrix}) = \frac{6}{2} = 3$

② $Y(HH) = 2$, $Y(HT) = 1$, $Y(TH) = 1$, $Y(TT) = 0$

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$$\begin{aligned}\textcircled{1} \quad E[X] &= \frac{1}{6} \times \frac{1}{2} + \frac{1}{6} \times 1 + \frac{1}{6} \times \frac{3}{2} + \frac{1}{6} \times 2 + \frac{1}{6} \times \frac{5}{2} + \frac{1}{6} \times 3 \\ &= 1.75\end{aligned}$$

$$\textcircled{2} \quad E[Y] = \frac{1}{4} \times 2 + \frac{1}{4} \times 1 + \frac{1}{4} \times 1 + \frac{1}{4} \times 0 = 1$$

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R_A を A 株の収益率 (確率変数)

R_B を B 株の収益率 (確率変数) とする

$$\begin{aligned}E[R_A] &= \frac{1}{3} \times (-1.0\%) + \frac{1}{3} \times 2.0\% + \frac{1}{3} \times 5.0\% \\ &= \frac{-1.0\% + 2.0\% + 5.0\%}{3} = 2.0\%\end{aligned}$$

$$\begin{aligned}E[R_B] &= \frac{1}{3} \times (-5.0\%) + \frac{1}{3} \times 2.0\% + \frac{1}{3} \times 9.0\% \\ &= \frac{-5.0\% + 2.0\% + 9.0\%}{3} = 2.0\%\end{aligned}$$