

ES1

Process binomiale

$$P(\text{uno su } pm) = \frac{1}{2}$$

$$P(\text{due su } 2ip) = \frac{1}{2}$$

$$P(2 \text{ per. e } 2 \text{ su } 1) = \binom{4}{2} \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right)^2 = \frac{6}{16} = \frac{3}{8}$$

ES2

① $\left\{ \begin{array}{l} \text{un } 6 \text{ e una coppia} \\ \text{A} \end{array} \right\} \cup \left\{ \begin{array}{l} \text{due } 6 \text{ e uno} \\ \text{B} \\ \text{coppie} \end{array} \right\} \cup \left\{ \begin{array}{l} \text{tre } 6 \text{ e uno} \\ \text{C} \\ \text{coppie} \end{array} \right\}$

$$\#(A) = \binom{5}{1} \binom{4}{2} 9 \cdot 8 \cdot 7 = 15 \cdot 120$$

$$\#(B) = \binom{5}{2} \binom{3}{2} \cdot 9 \cdot 8 = 2160$$

$$\#(C) = \binom{5}{3} \binom{2}{2} \cdot 9 = 90$$

$$P = \frac{1}{17320}$$

② $P = \frac{1}{\binom{5}{3} \cdot 10 \cdot 9 \cdot 8} = \frac{1}{7200}$

ES3

$$\sum_{n=2}^{\infty} (-1)^n \frac{x^n}{n \ln n}$$

$$\lim_{n \rightarrow \infty} \sqrt[n]{\frac{|x|^n}{n \ln n}} = |x| < 1 \quad \text{se}$$

$$-1 < x < 1$$

per $x=1$ e $x=-1$ $\sum \frac{1}{n \ln n} = +\infty$ *Autunno di Cauchy*

ES4

$$D = \mathbb{R}^+$$

$$\lim_{x \rightarrow +\infty} e^{-x} \log x = +\infty \quad \text{L'Hopital}$$

$$\lim_{x \rightarrow 0^+} e^{-x} \log x = -\infty$$

$$f' = -e^{-x} \log x + \frac{e^{-x}}{x}$$

$$\frac{1}{x} - \log x = 0 \quad \text{1 sola volta}$$

