

ES. B 10 APPOLO COMPLETO

$$S(\omega) = \sum_{i=1}^{1000} X_i(\omega), \omega \in \Omega \quad \Pi = \{ \min \{ m \in \mathbb{N} : P(S \leq m) \geq 0.99 \}$$

$$E[X_i] = \frac{1}{400} \quad E[S] = \frac{1}{400} \cdot 1000 = \frac{5}{2} \quad \checkmark \quad p = p(1-p)$$

$$Var[X_i] = \frac{1}{400} \left(1 - \frac{1}{400} \right) = \frac{1}{400} \left(\frac{399}{400} \right) \cdot 1000 = \frac{399}{160}$$

① (H5BY5146V)

$$P(S \leq K) = 1 - P(S > K) = P(S - E[S] \leq K - 1 - \frac{5}{2}) \quad \checkmark \quad 5/2$$

$$\stackrel{\text{CHG}}{=} P(S - E[S] \leq K - 3/2) \leq \frac{N(0,1)(s)}{(K - 3/2)^2} \Rightarrow \frac{399}{160} \cdot \frac{1}{(K - 3/2)^2}$$

$$= 1 - \frac{399}{160} \cdot \frac{1}{(K - 3/2)^2} \leq \frac{59}{1008} \quad - \frac{399}{160} \cdot \frac{1}{(K - 3/2)^2} \leq - \frac{1}{100}$$

$$\frac{160 \cdot 399}{399 \cdot 160} \cdot \frac{1}{(K - 3/2)^2} \leq \frac{1}{100} \cdot \frac{160}{399} \quad \frac{1}{(K - 3/2)^2} \leq \frac{8}{1995}$$

$$(K - 3/2)^2 \geq \frac{1995}{8}$$

$$K \geq \sqrt{\frac{1995}{8}} + 3/2$$

① POISSON

$$X = 1000 \cdot \frac{1}{400} = \frac{5}{2}$$

$$P_{\text{poiss}}(x) \approx 20,99 \quad (x=7)$$

② NORMAL

$$E[S] = 5/2 \quad \text{var}(S) = \frac{399}{160}$$

$$\bar{S} = \frac{1}{\sqrt{\text{var}(S)}} \quad (S - E[S]) = \frac{1}{\sqrt{1000 \cdot \text{var}(X_i)}} = \sum_{i=1}^{1000} (X_i - E(X_i))$$

$$\Phi\left(\frac{K - E[S]}{\sqrt{\text{var}(S)}}\right) \geq 0,99$$

NOVO UN MICROCHIPS
914 EXACAO, 99% E
MEU

$$\frac{K - E[S]}{\sqrt{\text{var}(S)}} \approx 2,33$$

$$\frac{K - 5/2}{\sqrt{\frac{399}{160}}} \geq 2,33 \quad \rightarrow \quad K \geq 2,33 \cdot \sqrt{\frac{399}{160}} + 5/2$$