ЦПТ (простейшая)

$$\frac{\sum \xi_i - n \cdot M\xi}{\sqrt{nD\xi}} \rightsquigarrow N(0,1)$$

$$\frac{\bar{x} - M\xi}{\sqrt{D\xi}} \sqrt{n} \rightsquigarrow N(0,1)$$

$$M\xi = \int_{-\infty}^{\infty} x\, dF(x) = \int_{-\infty}^{\infty} x\, p(x)\, dx = \int_0^{\infty} x e^{-x} dx =$$

$$= \int_0^{\infty} x \cdot e^{-x} dx = \int_0^{\infty} -x \cdot d(e^{-x}) = -x \cdot e^{-x} \Big|_0^{\infty} + \int_0^{\infty} e^{-x} dx$$

$$= -x \cdot e^{-x} \Big|_0^{\infty} + (-e^{-x}) \Big|_0^{\infty} = 0 - (0 - 1) = 1$$

$$M\xi^2 = \int_0^{\infty} x^2 e^{-x} dx = \int_0^{\infty} -x^2 d(e^{-x}) = -x^2 \cdot e^{-x} \Big|_0^{\infty} +$$

$$+ 2\int_0^{\infty} x e^{-x} dx = 0 + 2 = 2$$

$$D\xi = M\xi^2 - (M\xi)^2 = 2 - 1 = 1.$$

$$\frac{\bar{x} - 1}{\sqrt{1}} \sqrt{25} \rightsquigarrow N(0,1) \Rightarrow \bar{x} \rightsquigarrow N\left(1; \frac{1}{25}\right).$$