

$$\lim_{n \rightarrow \infty} e^{-2n} \sum_{k=0}^n \frac{(2n)^k}{k!}$$

we know

$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!}$$

(*)

[from (*)]

$$\begin{aligned} \Rightarrow \lim_{n \rightarrow \infty} e^{-2n} \times e^{2n} \\ = \lim_{n \rightarrow \infty} e^{2n-2n} = \boxed{1} \end{aligned}$$