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IF L_n ARE ORTHO TO e^{-x} - WEIGHT FUNCTION. IT MUST BE THAT,

$$\langle L_n, e^{-x} \rangle = \emptyset = \int_0^\infty L_n e^{-x} \, dx$$

$n = \emptyset$, $L_0 = 1$

$$\int_0^\infty (1)\cdot e^{-x} \, dx = 1 \ \dots\ ?$$

HOW DOES ONE DEFINE $\langle \alpha, \beta \rangle$?

IF ITS MEAN THAT L_n ORTHO TO $L_{i \neq n}$

$$\longrightarrow \langle L_n, L_{n+1} \rangle = \emptyset$$

$$\int_0^\infty L_0 \cdot L_1 \cdot e^{-x} \, dx = \int_0^\infty (1)\cdot(1-x)\cdot e^{-x} \, dx = \int_0^\infty e^{-x} - xe^{-x} \, dx$$

NEED $[-1, 1] \longrightarrow [0, \infty]$

$$= \int_0^\infty e^{-x} - \int_0^\infty x e^{-x}$$

$$= 1 - 1 = 0 \ \checkmark$$

$\boxed{L_0 \ \& \ L_1 \text{ ARE ORTHO}}$ ...