$\frac{8}{a}$

$\langle L_1, L_2 \rangle = \varnothing \longrightarrow L_1$ & L_2 ARE ORTHOGONAL, THEN L_1 & L_2 MUST BE ORTHOGONAL AS WELL

$$\langle L_1, L_2 \rangle = \int_{\varnothing}^{\infty} L_1 L_2 e^{-x} dx$$

$$= \int_{\varnothing}^{\infty} (1-x)(x^2 - 4x + 2) e^{-x} dx.$$

$$= \int_{0}^{\infty} [(x^2 - 4x + 2) - (x^3 + 4x^2 - 2x)] e^{-x} dx$$

$$= \int_{0}^{\infty} [x^3 - 3x^2 - 2x + 2] e^{-x} dx$$

$$= 6 - 6 - 2 + 2$$

$$= \varnothing \therefore$$