8.

$$\lim_{b\to\infty}\left[-e^{-b}+e^{0}+e^{-b}(b+1)-e^{0}\right]=0$$

$$1-1=0$$

$$\langle L_0, L_2\rangle = 0$$

$$\int_0^{\infty} L_0 L_2 e^{-x}\,dx = 0$$

$$\lim_{b\to\infty}\left[\int_0^{b} x^2e^{-x}-4xe^{-x}+2e^{-x}\,dx\right]=0$$