

$$x(t) = e^{-t} t^2 u(t)$$

since $\mathcal{L}\{t^2 u(t)\} = \frac{2}{s^3}$

by freq. shift property

$$\mathcal{L}\{e^{-t} t^2 u(t)\} = \frac{2}{(s+1)^3}$$