PROBLEM SET #14

Chapter 15, Solution 49.

(a) $t*e^{\alpha t}u(t) =$

$$\int_0^t e^{a\lambda}(t-\lambda)d\lambda = t\frac{e^{a\lambda}}{a}\bigg|_0^t - \frac{e^{a\lambda}}{a^2}(a\lambda-1)\bigg|_0^t = \underline{\frac{t}{a}(e^{at}-1) - \frac{1}{a^2} - \frac{e^{at}}{a^2}(at-1)}$$

$$= \frac{e^{at}}{a^2} - \frac{(at+1)}{a^2}$$