

$$e) \int_0^u 4x e^{-tx} dx = \left[-\frac{4}{t^2} (tx+1) \cdot e^{-tx} \right]_0^u$$

$$t := \frac{1}{2}$$

$$A(u) = \left[-16 \left(\frac{1}{2}x + 1 \right) \cdot e^{-\frac{x}{2}} \right]_0^u$$

$$= -16 \left(\frac{1}{2}u + 1 \right) \cdot e^{-\frac{u}{2}} - (-16)$$

$$= (-8u - 16) e^{-\frac{u}{2}} + 16 = \frac{-8u - 16}{e^{\frac{u}{2}}} + 16$$

$$\lim_{u \rightarrow \infty} A(u) = \underline{\underline{16 \text{ FE}}}$$