Section 28.3: cont'd:

one last example:

$$\int_0^4 \frac{e^{-\sqrt{x}}}{\sqrt{x}}\, dx$$

let $u = -\sqrt{x} = -x^{1/2}$

$du = -\frac{1}{2} x^{-1/2}\, dx$

$\quad = -\frac{1}{2}\frac{dx}{\sqrt{x}}$

$$= \int_{x=0}^{x=4} -2\, e^{u}\, du$$

$$= -2e^{u}\Big|_{x=0}^{x=4}$$

$$= -2e^{-\sqrt{x}}\Big|_{x=0}^{x=4}$$

$$= -2e^{-2} + 2e^{0}$$

$$= -2e^{-2} + 2 \qquad = \qquad 2 - \frac{2}{e^{2}}$$