Thursday - January 28, 2016

(89) $-\frac{1}{2}\int_0^1 e^{-2x}\,dx = -\frac{1}{2}\int_0^{-2} e^{u}\,du$

$u = -2x$

$du = -2\,dx$

$= -\frac{1}{2}\left[e^{u}\right]_0^{-2}$

$x = 1,\ u = -2$

$x = 0,\ u = 0$

$= -\frac{1}{2}\left(e^{-2} - 1\right)$

$= -\frac{1}{2}\left[\frac{1}{e^2} - \frac{e^2}{e^2}\right] = \frac{e^2 - 1}{2e^2}$

(95) $\int \frac{e^{-x}}{1+e^{-x}}\,dx$

$\int \tan x\,dx = -\int \frac{-\sin x}{\cos x}\,dx = -\int \frac{1}{u}\,du$

$u = \cos x$

$du = -\sin x\,dx$

$= -\ln|\cos x| + k$