$$\rightarrow \int e^x \, dx = e^x + C$$

$$\int x^n \, dx = \frac{1}{n+1} x^{n+1} + C, \quad n \neq -1$$

$$\rightarrow \int \frac{1}{x} \, dx = \int x^{-1} \, dx = \ln |x| + C$$

jos $x > 0$ niin

$$= \ln x + C$$

$$\int \frac{1}{x+1} \, dx, \; x > -1 = \ln (x+1) + C$$

279. a) $\int \frac{(x-1)^2}{x}\,dx = \int \frac{x^2-2x+1}{x}\,dx$, $x>0$

dx:in siinto:

$$\int \frac{dx}{x} = \int \frac{1}{x}\,dx$$

$$= \int \left(x - 2 + \frac{1}{x}\right) dx$$

$$= \frac{1}{2}x^2 - 2x + \ln x + C$$

b) $\int \frac{4e^{2x}}{1+e^{2x}}\,dx = 4 \cdot \frac{1}{2} \int 2e^{2x}\left(1+e^{2x}\right)^{-1} dx$

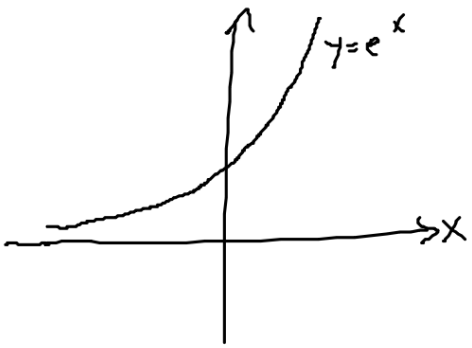
$s(x) = 1 + e^{2x}$

$u(x) = \frac{1}{x} = x^{-1}$

$s'(x) = e^{2x} \cdot 2$

$$= 2 \ln\left|1+e^{2x}\right| + C$$

$$= 2 \ln\left(1+e^{2x}\right) + C$$



c) $\int \frac{e^x + e^{2x}}{(1+e^x)^2}\,dx$

$a^m a^n = a^{m+n}$

$= \int \frac{e^x \cancel{(1+e^x)}}{(1+e^x)^{\cancel{2}}}\,dx$

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

$s(x) = 1+e^x$

$s'(x) = e^x$

$u(x) = x^{-1}$

$= \ln(1+e^x) + C$

$|a| = \begin{cases} a, & a \geq 0 \\ -a, & a < 0 \end{cases}$

S. 42 : 275, 277, 279
S. 35 : 269, 272

$$\int \frac{1}{x-1}\,dx = \ln|x-1| + C$$

$x < 1 \rightarrow x - 1 < 0$

$$= \ln -(x-1) + C$$

$$= \ln(1-x) + C$$