$\therefore C' = \frac{1}{e^{-\frac{1}{2}}} = e^{\frac{1}{2}}$

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

$\int x \ln x \, dx$

L	ln x
I	
A	x
T	
E	
D	

$=$

Other integrals to attempt

~~$\int x \ln$~~ **Further Questions**

Q's: $\int \frac{8x}{x^2} dx$, $\int \frac{\ln(3x)}{x} dx$, $\int \frac{x^4}{x^5+1} dx$, $\int \frac{dx}{e^x+1}$

$\int (\ln x)^2 dx$, $\int_0^{\pi} t^3 \cos^2 t \, dt$, $\int_{\sqrt{\frac{\pi}{2}}}^{\sqrt{\pi}} \theta^3 \cos(\theta^2) d\theta$

Does $\int_{-\infty}^{\infty} \frac{x^3 dx}{1+x^8}$ exist? If so what is its value?

$\int \frac{x^4}{x^5-7} \ln(x^5-7) dx$, $\int \frac{\ln x}{x^5} dx$, $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$, $\int \sqrt{x} \ln \sqrt{x} \, dx$

$$\int \frac{1}{x \ln(x^2)}\,dx \;,\; \int \frac{\ln(\ln(x))}{x}\,dx$$

$$\int e^{2\theta}\sin 3\theta\,d\theta \;,\; \int \sin^{-\frac{1}{3}}x\cos^{3}x\,dx \;,$$

$$\int \tan^3 x\,dx \;,\; \int \cos^4 x\,dx \;,\; \int \tan^3 x \sec^5 x\,dx \;,$$

$$\int \tan x \sec^4 x\,dx \;,\; \int \sec^3 x\,dx \;,\; \int (36-9x^2)^{-\frac{3}{2}}dx \;,$$

$$\int \frac{1}{x^2+6x+18}\,dx \;,\; \boxed{\int \frac{x^2+2x+4}{\sqrt{x^2-4x}}\,dx}\;,$$

$$\frac{d}{dx}\left(\int_0^{\cos x} \frac{t^4+6}{t^2+4}\,dt\right) \;,\; \boxed{\int \sin\sqrt{x}\,dx}\;,$$

$$\int \frac{x+2}{x^2+2x+2}\,dx \;,\; \int_0^5 (1+x)\ln(1+x)\,dx$$