

SMC Math Integration Club
Loophole Logarithms and Finding Derivatives

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1) $\int e^x(\cos x - \sin x) dx$

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

$$3) \int x^{\frac{\ln \ln x}{\ln x} - 1} dx$$

$$4) \int \sin \ln (x) + \cos \ln x \, dx$$

5) **Challenge**

$$\int_0^\infty \left(\frac{1}{x(1+x)} - \frac{\ln(1+x)}{x^2} \right) (1+x)^{\frac{1}{x}} dx$$