

1- استعمال الصيغة : $[\ln f(x)]' = \frac{f'(x)}{f(x)}$

2- أحسب : $\frac{1}{1-x} + \frac{1}{1+x} - \frac{2}{1+x^2}$

3- ضع : $U'(x) = 1$ و $V(x) = \ln\left(\frac{1-x^2}{1+x^2}\right)$

4- ضع $x = \sin t$ وستجد أن :

$$\begin{aligned} \int_0^{\frac{\pi}{6}} \cos t \ln\left(\frac{\cos^2 t}{1+\sin^2 t}\right) dt &= \int_0^{\frac{1}{2}} \ln\left(\frac{1-x^2}{1+x^2}\right) dx \\ &= I\left(\frac{1}{2}\right) = \ln\left(3\sqrt{\frac{3}{5}}\right) - 2 \operatorname{Arc} \operatorname{tg} \frac{1}{2} \end{aligned}$$



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