43 $\displaystyle\int_0^1 \frac{e^x}{e^x+1}\,dx = \ln\left(\frac{1+e}{2}\right)$

$$\int_0^{\ln 2} \frac{e^x - e^{-x}}{e^x + e^{-x}}\,dt = \ln \frac{5}{4}.$$

```
1 int((exp(x)/(exp(x)+1),x,0,1))
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$-\ln(2)+\ln(\exp(1)+1)$

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2 int((exp(x)-exp(-x))/(exp(x)+exp(-x)),x,0,ln(2))
```

$-\ln(2)+\ln(\frac{5}{2})$

46 • $\displaystyle I = \int_1^e (x^2+1)\ln x\,dx.$

Posons $\begin{cases} u(x) = \ln x \\ v'(x) = x^2+1 \end{cases}$ d'où $\begin{cases} u'(x) = \dfrac{1}{x} \\ v(x) = \dfrac{x^3}{3} + x \end{cases}$

Ainsi, $\displaystyle I = \left[\left(\frac{x^3}{3}+x\right)\ln x\right]_1^e - \int_1^e \left(\frac{x^2}{3}+1\right)dx\,;$

$$I = \frac{e^3}{3} + e - \left[\frac{x^3}{9}+x\right]_1^e = \frac{2e^3}{9} + \frac{10}{9}.$$