

Problem 1 Calculate $\int (x^2 + x + 1) e^x dx$.

Problem 2 Prove the formula:

$$\int x^m (\ln x)^n dx = \frac{x^{m+1} (\ln x)^n}{m+1} - \frac{n}{m+1} \int x^m (\ln x)^{n-1} dx$$