

Evaluate the following integrals using integration by parts, and *check your answers by differentiating your results!!*

1. $\int x \ln(x) dx$

2. $\int x e^x dx$

3. $\int x^3 e^{x^2} dx$ (Hint: $u = x^2$ and $dv = x e^{x^2} dx$)

4. $\int \ln(x) dx$ (Hint: $u = \ln(x)$ and $dv = dx$)