

Evaluate the following using integration by parts

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

2. $\int x \sin(x) dx$

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

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

5. $\int \ln(x)^2 dx$