

Math 102 — More integration by parts

Summary. Try each of the following problems together in a small group.

Problem 1. Find the following definite integrals using integration by parts. Remember to start by making a choice for u and for dv . Sometimes you might have to use substitution first or do integration by parts twice or do some algebra after using integration by parts.

a. $\int x^2 \sin x \, dx$

b. $\int \sin^2 x \, dx$

c. $\int x^2 \cos(x^3) \, dx$

Problem 2. Find the following areas.

a. Under $y = xe^{-x}$ for $0 \leq x \leq 2$.

b. Between $y = \ln x$ and $y = \ln(x^2)$ for $1 \leq x \leq 2$.