

MTH 252Z Lab

Integration by Parts

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Prompts

1. Integration by parts is used to integrate a product of functions. What other integration strategy do you know that is used to integrate a product? Which one is typically easier?
2. Evaluate $\int y \sin y \, dy$.
3. Evaluate $\int x^2 \ln x \, dx$.
4. Evaluate $\int_0^{\frac{\pi}{4}} x \sec^2 x \, dx$.
5. Evaluate $\int e^y \sin(2y) \, dy$.
6. Evaluate $\int x^2 e^{x^3} \, dx$.
7. Consider $\int \cos \theta \sin \theta \, d\theta$.
 - (a) Evaluate the integral using substitution.
 - (b) Use a double-angle formula for sine to transform the integrand. Then use substitution to evaluate the integral.
 - (c) Use integration by parts to evaluate the integral.
8. Evaluate $\int_0^{15} \sqrt{225 - x^2} \, dx$.