

Math 2300-007: Integration By Parts

Key points:

- Integration by parts comes from the _____ rule for derivatives:

- The integration by parts formula is given by

- Advice for choosing u and dv :

- Use integration by parts when...

Compute the following integrals using integration by parts:

1. $\int x \cos x \, dx$

2. $\int_0^2 x e^x \, dx$

3.
$$\int_4^9 \frac{\ln(y)}{\sqrt{y}} dy$$

4.
$$\int \theta^2 \sin(3\theta) d\theta$$

5.
$$\int \arctan x dx$$

6. $\int \ln x \, dx$

7. $\int (\ln x)^2 \, dx$

8. $\int_0^1 \frac{x+1}{e^x} \, dx$

9. $\int e^t \cos t \, dt$

10. $\int \sec^3 x \, dx$

11. $\int_1^{\sqrt{3}} \arctan\left(\frac{1}{x}\right) \, dx$