

CALCULUS 2
7.1 INTEGRATION BY PARTS

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Problem 1.

$$\int x e^x dx$$

Problem 2.

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

Problem 3.

$$\int x^2 e^{-x} dx$$

Problem 4.

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

Problem 5.

$$\int \arctan(x) dx$$

Problem 6.

$$\int e^x \sin(x) dx$$

Problem 7. Prove the reduction formula

$$\int (\ln x)^n dx = x(\ln x)^n - n \int (\ln x)^{n-1} dx$$

Problem 8.

$$\int x^4 e^x dx$$

Problem 9.

$$\int x^5 \cos(2x) dx$$

Problem 10. Verify using tabular integration the answers for $\int x e^x dx$ and $\int x^2 e^{-x} dx$.