INTEGRATION BY PARTS

REVERSING THE PRODUCT RULE

EXAMPLE

Integrate $\left(xe^x\right)' = e^x + xe^x$

REVERSING THE PRODUCT RULE

$$\int fg'dx = fg - \int f'gdx$$

INTEGRATION BY PARTS

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THEOREM

$$\int u\,dv = uv - \int v\,du$$

EXAMPLE

Calculate the integral

$$\int x e^x dx$$

EXAMPLE

Calculate the integral

$$\int \frac{\ln x}{x^3}\, dx.$$

ILATE RULE FOR INTEGRATION

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Inverse trig: $\arcsin$, $\arccos$ etc.
Logarithmic $\ln x$, $\log_2 x$
Algebraic x^2, $\sqrt{x}$ etc.
Trigonometric $\sin$, $\cos$ etc.
Exponential e^x, 2^x etc.

EXAMPLE

Calculate the integral

$$\int x \ln x\, dx$$

EXAMPLE

Calculate the integral

$$\int \arcsin(x)\,dx$$