

Sample LaTeX Document

Your Name

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1 Question to AI

Good morning. Could You please show me the Green Gauss integration formula for a scalar field in the plane (x,y) , $f : (x,y) \rightarrow z$, $f : \mathbb{R}^2 \rightarrow \mathbb{R}$, on a square domain $[a,b] \times [c,d]$, where f is C^1 on \mathbb{R}^2 .

Thanks. I am trying to save your precious answer in LaTeX, but I got some errors, that I commented out, to compile. If I paste here my source, could You please teach me how to correct those LaTeX mistakes? I still have to learn LaTeX.

2 Answer from AI

Sure! I'll go through your LaTeX code and point out any issues or improvements. Here's your corrected LaTeX source with explanations where necessary: Good morning! Certainly, here is the Green-Gauss integration formula for the scalar field $f(x,y)$, defined in \mathbb{R}^2 and C^1 on \mathbb{R}^2 , applied to the square domain $[a,b] \times [c,d]$:

$$\int_a^b \int_c^d \left(\frac{\partial P}{\partial x} + \frac{\partial Q}{\partial y} \right) dx dy = \int_{\partial R} (P dx + Q dy)$$

Where:

- $R = [a,b] \times [c,d]$ is the square domain.
- ∂R is the closed boundary of R , oriented positively (counterclockwise).
- $P(x,y)$ and $Q(x,y)$ are components of a vector field $\mathbf{F} = (P, Q)$.

This formula essentially relates the integral of the divergence of \mathbf{F} over R to the line integral of \mathbf{F} along the boundary ∂R . In your case, the scalar field $f(x,y)$ can be substituted appropriately into the formula to analyze its behavior on the given domain.