Advanced Calculus - LaTeX Style Math

1. Series Convergence:

$$\sum_{n=1}^{\infty} 1/n^2 = \cdot^2/6$$

2. Definite Integration:

$$\int_0^{\infty} \sin(x)\,dx = 2$$

3. Complex Fraction:

$$\frac{x^2 + 2x + 1}{x + 1} = x + 1$$

4. Matrix Operations:

$$\begin{pmatrix} a\cdot\cdot & a\cdot\cdot \\ a\cdot\cdot & a\cdot\cdot \end{pmatrix}$$

Advanced Mathematical Expressions

5. System of Equations:

$$2x + 3y = 7$$

$$4x - y = 1$$

Solution: $x = 1, y =$ 5 / 3

6. Maxwell's Equation:

- $\times B = \cdot_{0} J$

7. Chemical Reaction:

$$2H_{2} + O_{2} \cdot 2H_{2}O$$

Text Extraction Challenge Cases

Regular paragraph text that should extract normally. This represents the kind of explanatory text found in textbooks between mathematical expressions.

The challenge comes when mathematical notation is embedded within sentences, such as: "The limit of f(x) as x approaches infinity is often denoted as lim f(x) = L."

Another challenge occurs with inline mathematical expressions like $x^2 + y^2 = r^2$ or when variables are defined such as "let · be the angle of rotation."

Multi-variable calculus expressions such as ·f/·x represent partial derivatives, and these symbols often get lost or corrupted during text extraction from PDFs generated by LaTeX or other mathematical typesetting systems.

Problematic Cases:

Overlapping Text

W i d e l y S p a c e d