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A Sample Mathematical Study: Replace with Your Article Title

First Author[1,*] and Second Author[2]

[1]Department of Mathematics, Institution Name, City, Country
[2]Department of Mathematics, Institution Name, City, Country
[*]Corresponding author: author@example.com
Second author: coauthor@example.com

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Abstract

This paragraph demonstrates the abstract format for a mathematical research article. Replace it with a concise account of the research problem, the methods used, the principal findings and their significance. State the main contribution clearly and avoid unsupported claims. Define any essential nonstandard notation and make the abstract understandable independently of the main text. The elementary sequence considered in this template serves only to illustrate mathematical typesetting and does not represent a novel research contribution. Replace all demonstration material with your original manuscript before submission.

Keywords: Mathematical analysis; sequences; convergence; replace with relevant keywords
Mathematics Subject Classification (2020): 40A05; replace with applicable MSC 2020 codes

1 Introduction

The introduction should explain the research problem, its mathematical context and the contribution of the manuscript. Discuss closely related work and cite the sources on which your argument depends. Clearly distinguish established results from the new results proved in your article. The reference in this template is a typesetting example [1]; replace it with a genuine source relevant to your work.

This demonstration uses the elementary sequence $a_n = 1/(n+1)$ for $n \geq 0$. Its purpose is to show how authors can present notation, numbered equations, theorem statements, proofs, tables and figures within the journal layout. The convergence calculation is standard and is not presented as original research. Your submitted manuscript should instead contain the precise problem, assumptions and results of your own study.

Use consistent symbols throughout the article. Define each nonstandard term before it is used, and explain the role of every hypothesis. A clear introduction should allow readers to understand why the question is being investigated and how the approach relates to earlier work. Any claim of novelty should be supported by a careful comparison with the relevant literature.

Organize the remaining sections to suit your subject. A theoretical paper may contain preliminaries, main theorems, proofs and examples. A computational paper may additionally describe algorithms, datasets, parameter choices and reproducible experiments. Use section labels and cross-references rather than typing equation or table numbers manually. The journal template handles the visual style, but the authors remain responsible for mathematical correctness, accurate citations and complete reporting.

The rest of this sample is arranged as follows. Section 2 introduces notation and a definition. Section 3 demonstrates a theorem and its proof. Section 4 illustrates a table and a figure, and Section 5 supplies a brief conclusion. These headings are examples rather than a statement of mandatory journal policy.

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2 Preliminaries

Present the definitions, assumptions and established results required for the main argument. Let $\mathbb{N}_0 = \{0, 1, 2, \ldots\}$ and define

$$a_n = \frac{1}{n+1}, \qquad n \in \mathbb{N}_0. \tag{2.1}$$

Definition 2.1. A real sequence (x_n) converges to $L \in \mathbb{R}$ if, for every $\varepsilon > 0$, there exists $N \in \mathbb{N}_0$ such that $|x_n - L| < \varepsilon$ whenever $n \geq N$.

State assumptions explicitly. For a long expression, use an aligned environment rather than shrinking the font:

$$\begin{aligned} a_n - a_{n+1} &= \frac{1}{n+1} - \frac{1}{n+2} \\ &= \frac{1}{(n+1)(n+2)} > 0. \end{aligned} \tag{2.2}$$

3 Main Results

Theorem 3.1. *The sequence defined in Equation* (2.1) *is positive, strictly decreasing and converges to zero.*

Proof. For every $n \in \mathbb{N}_0$, we have $n + 1 > 0$, so $a_n > 0$. Equation (2.2) shows that $a_n > a_{n+1}$. Given $\varepsilon > 0$, choose an integer $N > 1/\varepsilon$. For every $n \geq N$,

$$|a_n - 0| = \frac{1}{n+1} \leq \frac{1}{N+1} < \varepsilon.$$

Thus $a_n \to 0$ as $n \to \infty$. □

Remark 3.2. This theorem is included solely as a formatting demonstration. Replace it and its proof with the results of your own research.

4 Illustrative Examples and Discussion

Table 1 displays selected exact values of the demonstration sequence. Use descriptive captions, define abbreviations and state units when applicable. Do not present illustrative data as experimental findings.

Table 1: Selected values of the demonstration sequence $a_n = 1/(n+1)$.

n	0	1	2	3	4
a_n	1	1/2	1/3	1/4	1/5

Figure 1 provides a self-contained example created directly in LaTeX. For your own figures, use sufficiently clear PDF, PNG or JPEG files and retain their filenames in the project ZIP.

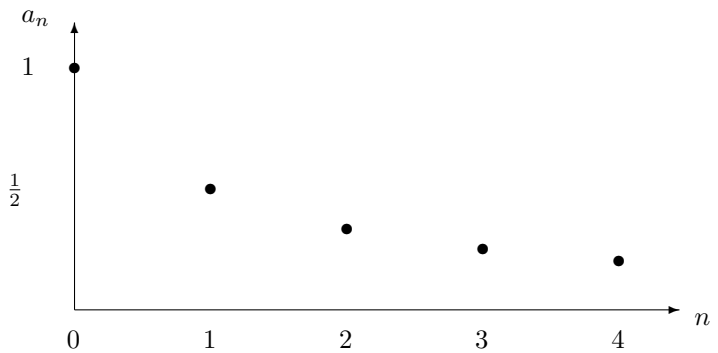


Figure 1: The first five terms of the demonstration sequence.

Discuss what your results establish and identify their limitations. A numerical illustration does not replace a proof, and a proof applies only under its stated assumptions. Where relevant, explain how another researcher could reproduce the computations.

5 Conclusion

Summarize the main findings without introducing unproved results. Explain the scope of the contribution and identify a specific direction for further research. This sample establishes only the elementary convergence result used to demonstrate the journal format; all sample content must be replaced before submission.

Acknowledgements

Replace this paragraph with the actual acknowledgements, or remove the section if it is not applicable.

Declarations

Conflict of interest: State any actual conflicts, or state that none exist if accurate.
Funding: Give the actual funding details, or state that no funding was received if accurate.
Data and code availability: Provide repository details or explain why this is not applicable.

References

[1] A. Example. Sample reference for formatting only: replace with a genuine source. *Demonstration Journal (not a real source)*, 1:1–5, 2026.

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