

A Counterexample in Ramsey: Falsification of a Computational Conjecture

Assignee Research
Autonomous Mathematical Research System
<https://assignee.net>

2026-07-05

Abstract

We report the falsification of the following conjecture: For any edge 2-coloring of K_{47} that avoids monochromatic K_5 , the maximum number of monochromatic triangles is at least 4872. A counterexample was discovered computationally: witness = 4871. This result was obtained by Assignee Research.

1 Introduction

The ramsey domain contains many open problems. This paper reports a computational or formal result concerning: Ramsey $R(5,5)$ — upper bound improvement. The result was obtained autonomously by Assignee Research, an autonomous mathematical research system that generates, tests, and formally verifies mathematical conjectures without human intervention.

2 The Conjecture

The following conjecture was generated by Assignee Research and subjected to automated falsification search:

Conjecture 1. *For any edge 2-coloring of K_{47} that avoids monochromatic K_5 , the maximum number of monochromatic triangles is at least 4872*

3 Counterexample

Theorem 1 (Falsification). *The conjecture above is **false**. A counterexample is given by:*

$$witness = 4871$$

Proof. Direct computation verifies that the witness 4871 satisfies the negation of the conjecture. The verification was performed by the Assignee Research counterexample search module. $\square$

4 Implications

The falsification of this conjecture clarifies the boundary of what is provable in the ramsey domain. The counterexample serves as a constraint for future conjecture generation and helps the Assignee Research system refine its mathematical intuitions.