Counterexample to Euler's Conjecture for Fifth Power

Arij Zulfi Mufassaroh & Adib Rifqi Setiawan

A direct computer search yielded:

$$55^5 + 3183^5 + 28969^5 + 85282^5 = 85359^5$$

as the counterexample to a conjecture proposed by Leonhard Euler in 1679 that at least n n th powers are required to sum to an n th power, $n > 2$ (Singh, 2017, p. 213; Nahin, 2011, p. 350).

Reference

- Nahin, P. J. (2011). *Dr. Euler's Fabulous Formula: Cures Many Mathematical Ills*. Princeton University Press.
- Singh, S. (2017). *Fermat's Enigma: The Epic Quest to Solve the World's Greatest Mathematical Problem*. Knopf Doubleday Publishing Group.