Advanced Proofs Package

Test Author

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1 Introduction

This package provides advanced mathematical proofs building upon both the base-math and algebra-theorems packages.

2 Advanced Results

We prove more sophisticated results using the foundation laid by previous packages.

Theorem 1. *The product of two even numbers is divisible by 4.*

Proof. Let a and b be even numbers. Then $a = 2k$ and $b = 2m$ for some integers k and m. Therefore, $ab = (2k)(2m) = 4km$, which is divisible by 4. $\square$

Corollary 1. *Any even number raised to an even power is divisible by 4.*