

Homework 02

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1 Example Problem

1.1 Theorem

If n is an even integer, then n^2 is even.

1.2 Proof

Since n is even, there is some integer k such that

$$n = 2k. \tag{1.1}$$

This means that

$$n = (2k)^2 = 4k^2 = 2(2k)^2. \tag{1.2}$$

From 1.2, we see that there is an integer $m = 2k$ where

$$n^2 = 2m. \tag{1.3}$$

Therefore, n^2 is even. ■

2 Sum of Evens

2.1 Theorem

The sum of any two even numbers is even.

2.2 Proof

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3 Sum of Evens

3.1 Theorem

The sum of an odd number and an even number is odd.

3.2 Proof

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4 Product of Integer and Even

4.1 Theorem

The product of any integer and an even number is even.

4.2 Proof

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5 Product of Odds

5.1 Theorem

The product of any two odd numbers is odd.

5.2 Proof

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