Daniel Meyer

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Exam 2 Part 2

**Question 3**

For all integers n, if n is odd then n2 is odd.

**Proof:**

Suppose *n* *[particular but arbitrarily chosen]* is any odd integer. By definition of odd, *n* = 2*k* + 1for some integer *k*. Then,

*n* = 2k + 1

*n*2 = (2k + 1)(2k + 1)

= (4k2 + 4k + 1)

However, 4k2 + 4k is an integer because it is a sum of products of integers. Thus, *n*2 is an integer plus 1, and thus is odd.