MATH 1200 (SECTION E): QUESTION ON BOARD OCT. 4

Question. If n is odd, then n^2 is odd.

Proof. Let n be an odd integer. Then $n = 2k + 1$ for some integer k. Therefore,

$$n^2 = (2k + 1)^2 = 4k^2 + 4k + 1 = 2(2k^2 + 2k) + 1.$$

Let $x = 2k^2 + 2k$. Then $n^2 = 2x + 1$ is an odd integer.