Proof – Q1 [Practice/E](8/7/21)

If n is a positive integer, and n^2 is odd, prove that n is odd.

Solution

[Proof by contradiction]

Suppose that n is even. Then $n = 2m$, for some positive integer m.

But then $n^2 = (2m)^2 = 4m^2$, which is divisible by 2, and hence even. This contradicts the fact that n^2 is odd, and so n must be odd.