

Pledge: *I pledge my honor that I have abided by the Stevens Honor System.* -Eric Altenburg

1: Write a proof for the following theorem:

Theorem 1. *For any natural number n , the number $n^2 - n$ is even.*

Proof. Let $Q(x) = n^2 - n$. We can then rewrite this to be $Q(x) = n(n - 1)$.

Since n can either be even or odd given the first proposition, then n will end up being multiplied by its opposite type—be it even or odd—as seen in $Q(x)$. Therefore, regardless of the number chosen, an even number and an odd number will be multiplied together which always forms an even number. □