

Small Assignment 1 Corrections

Sunday, October 6, 2024 8:01 PM

1) "for every Integer n , $n^2 + n$ is even"

A) ✓

B) Correction:

To show this is false, we need to find a counter example s.t. for some n that is an integer, $n^2 + n$ is odd.

2) "IF n^2 is even, then n is even"

A) ✓

B) Correction:

for Contrapositive, Assume Q is false, show P is false
 $P \rightarrow Q \Leftrightarrow \neg Q \rightarrow \neg P$

Assume: n is odd (Not even)

W.T.S.: n^2 is odd (Not even)

C) Correction:

Assume: n^2 is even, and n is odd

W.T.S.: These assumptions will lead to a Contradiction, likely with seeing what an odd n squared is.

3) "For every positive Integer n , $n^2 + n$ is even"

A) Correction: Using Induction on n , what is the base case?

Base case: $n=1$

The base case would be checking if $1^2 + 1$ is even.

B) Correction: what is the IH, and what do we need to prove for the Induction step?

IH: Assume $n^2 + n$ is even

I step: we want to prove this will hold for $n+1$, so we want to show $((n+1)^2 + (n+1))$ is also even.