Problem 3 Solution

The statement is true

proof:- Case I n is odd

$\implies n+1$ is even

$\implies n(n+1)$ is even

$\implies n(n+1)+1$ is odd

$\implies n^2+n+1$ is odd

Case II:0 $n$is even

$\implies n(n+1)$is even

$\implies n(n+1)+1$ is odd

$\implies n^2+n+1$ is odd

Hence the statement is correct $\forall\ n \in \mathbb{Z}$