Gas Station Question

Define total as , now we need to prove this proposition:

For any integer n,if ,there must be a solution.

**Proof is as follows:**

1. If n==1,we can go from gas[0] to gas[0];
2. Assume that this proposition is true: For any integer n,if ,there must be a solution.
3. Now we consider about k=n+1.

3.1 and ,obviously we have a solution to complete the curit,such as from k to k.

3.2 If but ,as we all know without node k there is a solution: from I to I.And we can make sure that when we arrive at node I again, it must have rest gas = .So we can easily overcome node k because .So we can still complete the curit from I to I.

3.3 If ，there must be ,so if we choose some node as start node,it must have ability to overcome this shortage.

