Prove that the formula $H_n = n^2$ is a closed formula solution for the given recurrence relation, that gives the same result for H_n as the open solution $H_n = H_{n-1} + (2n-1)$ for all values of n.

$H_{n-1} + (2n-1) = n^2$ when $n = 2$ as shown below.

$H_{(2)-1} + (2(2)-1) = (2)^2$

$H_1 + (4-1) = 4$

$H_1 + 3 = 4$

$1 + 3 = 4$

$4 = 4$

Assume that $H_{n-1} + (2n-1) = n^2$ when $n = k$, where k is some integer.

Thus, $H_{(k-1)} + (2(k)-1) = (k)^2$.

and this means $H_{k-1} = (k)^2 - (2(k)-1)$ which is a useful fact.

* For step 3 of this proof, wherever you see an astrix, "*", it is signifying that we substituted something in for H_k or H_{k-1} based on the following.

$H_k = H_{k-1} + (2(k)-1)$

$H_{k-1} = (k)^2 - (2(k)-1)$