Lecture 04 Ticket

COSC 311: Algorithms, Fall 2022

Name: _____

Consider the following method that on input a positive integer n sums the *odd* numbers from 1 to $2n - 1$:

```
1 Sum(n):
2   total <- 0
3   for k = 1 up to n do
4     total <- total + 2 * k - 1
5   endfor
6   return total
```

Observe that for $n = 1, 2, 3, 4$, $\mathrm{Sum}(n)$ returns the values $1, 4, 9, 16$. In each case, the value returned by $\mathrm{Sum}(n)$ is n^2. Use induction to argue that that this formula always holds: for every positive integer n, the value returned by $\mathrm{Sum}(n)$ is n^2.