

Proving closed form solution for $g(n)$

Note: we came up with the closed form solution by computing $g(n)$ for $n = 1, 2, 3, 4, \dots, 10$.

Hence, we have verified that $P(n)$ is true for $n = 1, 2, \dots, 10$.

These are our base cases! (And no, we didn't need them all.)

So we can assume $N \geq 10$.