Sample Proof: zfischer

Prove that for all integers $n \geq 0, 3n^2 + 15n + 12$ is even.

Proof : $3n^2 + 15n + 12 = [n^2 + n] + [2(n^2 + 7n + 6)]$. Since $n^2 + 7n + 6$ is an integer, the latter term in brackets is even. Also, $n^2 + n = n(n + 1)$ is the product of an even and odd integer, which must be even. Since the two summands in brackets are even, the sum is even for all integers $n \geq 0$.