

It's true.

We can divide the polynomial into two parts, n^2 and $n + 1$.

If n is odd, n^2 will be even and $n + 1$ will be even,
the sum of them will be odd.

If n is even, n^2 will be odd and $n + 1$ will be odd,
the sum of them will also be odd.

Hence, it's proved true.