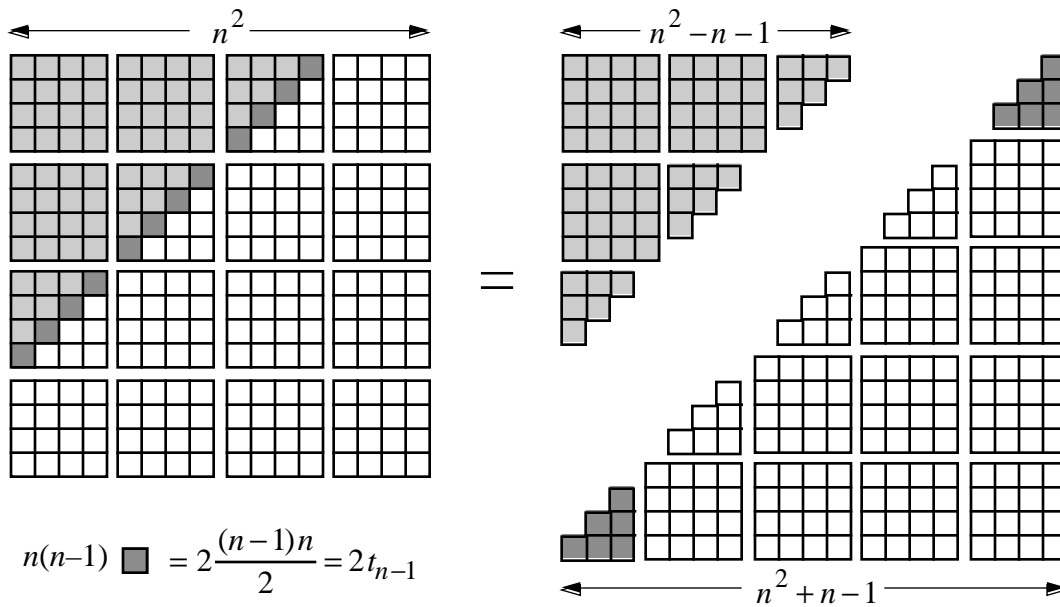


# NOTES

## Proof Without Words: Every Fourth Power Greater than One Is the Sum of Two Nonconsecutive Triangular Numbers

$$\begin{aligned}
 t_k = 1+2+\dots+k &\Rightarrow 2^4 = 15+1 = t_5 + t_1, \\
 &3^4 = 66+15 = t_{11} + t_5, \\
 &4^4 = 190+66 = t_{19} + t_{11}, \\
 &\vdots \\
 n^4 &= t_{n^2+n-1} + t_{n^2-n-1}.
 \end{aligned}$$



Note: Since  $k^2 = t_{k-1} + t_k$ , we also have  $n^4 = t_{n^2-1} + t_{n^2}$ .

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