

$$\begin{aligned}
& \frac{1}{n^4} \sum_{i=1}^n \left(n i^2 + n (2n+1)(n+1) \right) \\
&= \frac{1}{n^4} \left(n \sum_{i=1}^n i^2 + n^2 (2n+1)(n+1) \right)
\end{aligned}$$