

Problem 4

$$\begin{aligned} & \stackrel{\text{c)}}{\sum_{i=1}^{n-1} \sum_{j=1}^n \sum_{k=i}^j 1} + \Theta(\log n) + \Theta\left(\frac{n}{4}\right) = \sum_{i=1}^{n-1} \sum_{j=i}^n (j - i + 1) + \Theta(\log n) + \Theta\left(\frac{n}{4}\right) \\ &= \sum_{i=1}^{n-1} \frac{(n+1-i)(n+2-i)}{2} + \Theta(\log n) + \Theta\left(\frac{n}{4}\right) \in \Theta(n^3) \end{aligned}$$