$$\underbrace{\sum_{i=1}^{N-1}}_{C}\underbrace{\sum_{J=i+1}^{N}}_{B}\underbrace{\sum_{K=1}^{J}}_{A}1$$

$\sum = \text{lim. sup} - \text{lim. inf} + 1$

(A) $\sum_{K=1}^{J} 1 = J - \cancel{1} + \cancel{1}$

(B) $\sum_{J=i+1}^{N} J = \sum_{J=1}^{N-1} J + i \Rightarrow \underbrace{\sum_{J=1}^{N-1} J}_{B^1} + \underbrace{\sum_{J=1}^{N-1} i}_{B^2}$

(B^1) $\sum_{J=1}^{N-1} J = \frac{N-1(N-\cancel{1}+\cancel{1})}{2} \Rightarrow \frac{N^2-N}{2}$

(B^2) $\sum_{J=1}^{N-1} i = i\sum_{J=1}^{N-1} = i(N-1-\cancel{1}+\cancel{1}) \Rightarrow iN-i$

(B) $\frac{N^2-N}{2} + iN - i$

(C) $\sum_{i=1}^{N-1}\left(\frac{N^2-N}{2} + \underbrace{iN}_{N\sum i} - i\right) \Rightarrow \underbrace{\sum_{i=1}^{N-1}\left(\frac{N^2-N}{2}\right)}_{C^3} + \underbrace{N\sum_{i=1}^{N-1} i}_{C^2} - \underbrace{\sum_{i=1}^{N-1} i}_{C^1}$

(C^1) $\sum_{i=1}^{N-1} i = \frac{N-1(N-\cancel{1}+\cancel{1})}{\cancel{2}} \Rightarrow \frac{N^2-N}{2}$

(C^2) $N\sum_{i=1}^{N-1} i = N\left(\frac{N-1(N-\cancel{1}+\cancel{1})}{2}\right) = N\left(\frac{N^2-N}{2}\right) \Rightarrow \frac{N^3-N}{2}$

C^{3} $\sum_{i=1}^{N-1}\left(\frac{N^2-N}{2}\right) = \frac{N^2-N}{2}\left(\sum_{i=1}^{N-1} 1\right) \Rightarrow \frac{N^2-N}{2}\left(N-1-\cancel{1}+\cancel{1}\right)$

$$\frac{(N^2-N).(N-1)}{2} = \frac{N^3-N^2-N^2+N}{2}$$

C $\frac{N^3-2N^2+N}{2} + \frac{N^3-N}{2} - \left(\frac{N^2-N}{2}\right) \Rightarrow \frac{N^3-2N^2+N}{2} + \frac{N^3-N}{2} + \frac{N-N^2}{2}$

$$\frac{N^3-2N^2+N+N^3\cancel{-N}+\cancel{N}-N^2}{2} = \frac{2N^3-3N^2+N}{2}$$

$$f(N) = \frac{2N^3-3N^2+N}{2} \therefore O(N^3)$$