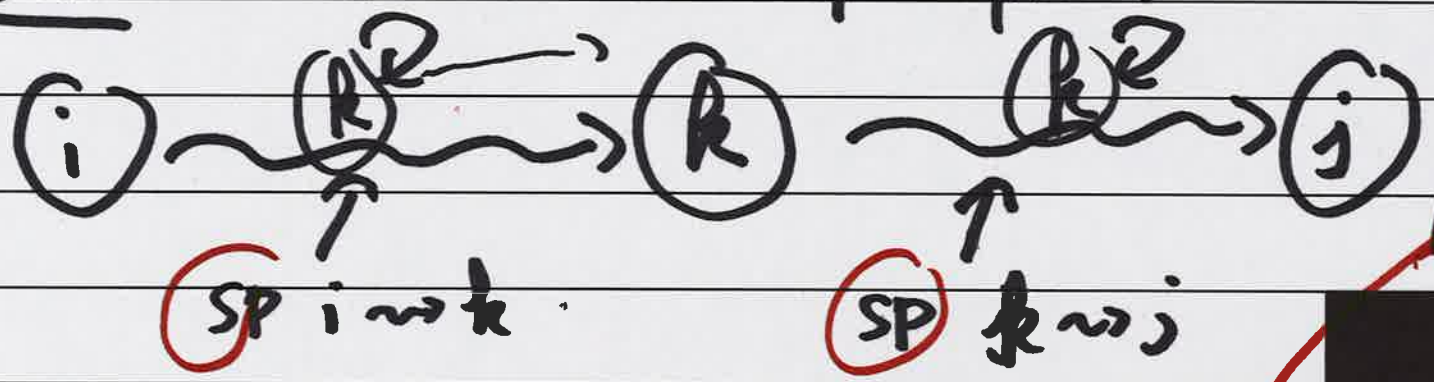
$d_{ij}^{(k)}$: opt. sol. for using $\{1 \dots k\}$ as int. vertices to compute shortest path (SP) $i \rightsquigarrow j$

Case 1 k not part of the path

→ int. vertices ? in $\{1, \dots, k-1\}$

→ $d_{ij}^{(k-1)}$ - (otherwise better option)

Case 2 k on the opt. path



$d_{ij}^{(k)} = d_{ik}^{(k-1)} + d_{kj}^{(k-1)}$

use anything in $\{1 \dots k\}$

(No cycles in SP, k endpoint in both) ⇒ only $\{1 \dots k-1\}$

[redacted]