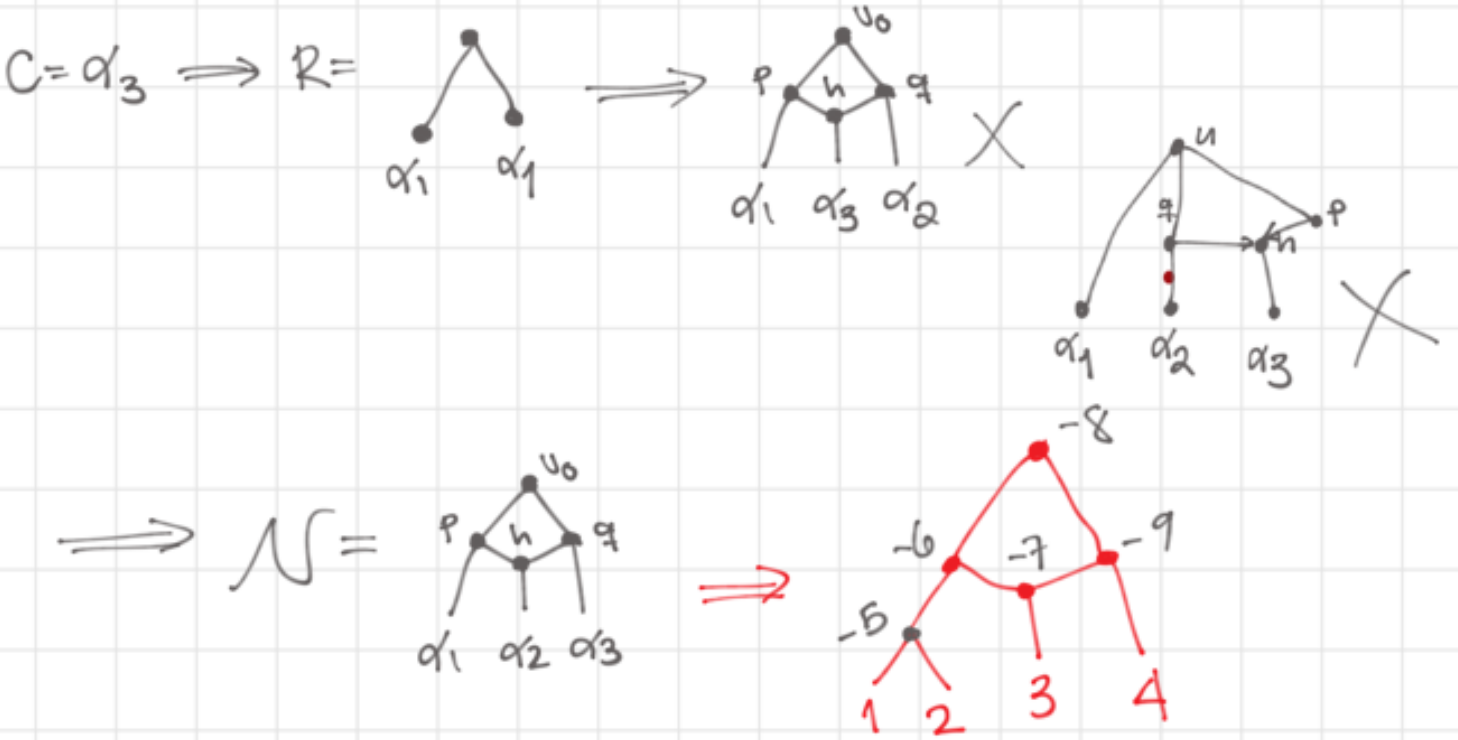
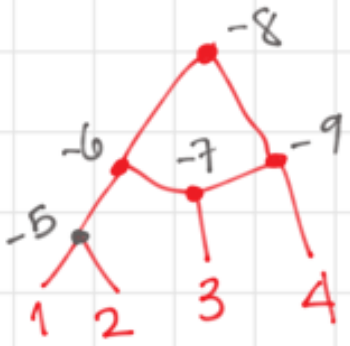
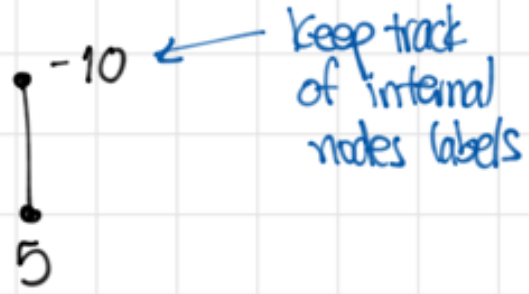


1 → -5
2 → -5
3 → -7
4 → -9
-5 → 1, 2
-6 → -5, -7, -8
-7 → 3, -6, -9
-8 → -6, -9
-9 → 4, -7, -8

*Adjacency list





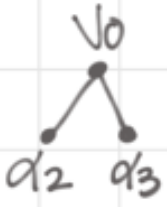
$1 \to -5$
$2 \to -5$
$3 \to -7$

$4 \to -9$
$-5 \to 1, 2$
$-6 \to -5, -7, -8$
$-7 \to 3, -6, -9$
$-8 \to -6, -9, -10$
$-9 \to 4, -7, -8$

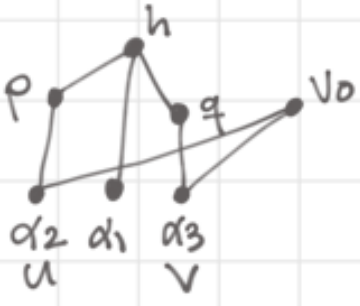
$5 \to -10$
$-10 \to 5, -8$

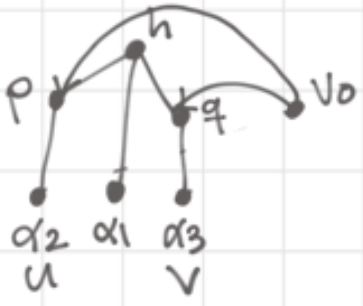
Question: Is adjancency list good for our purpose?

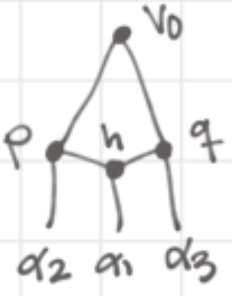
$C = \alpha_1 \Rightarrow R =$



$v_0 \to \alpha_2, \alpha_3$
$\alpha_2 \to v_0$
$\alpha_3 \to v_0$



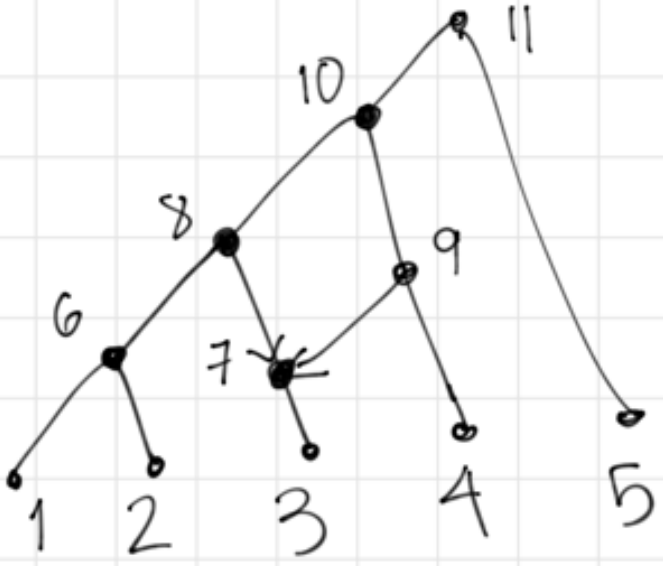




$v_0 \to \alpha_2, \alpha_3$
$\alpha_2 \to v_0, p$
$\alpha_3 \to v_0, q$

$v_0 \to p, q$
$\alpha_2 \to p \quad \alpha_3 \to q$

$p \to \alpha_2, h \quad h \to p, \alpha_1, q \quad p \to \alpha_2, h \quad h \to p, \alpha_1, q$
$q \to \alpha_3, h \quad \alpha_1 \to h \quad q \to \alpha_3, h \quad \alpha_1 \to h$



1 → 6
2 → 6
3 → 7
4 → 9
5 → 11
6 → 1,2,8
7 → 8,9,3
8 → 6,7,10
9 → 4,7,10
10 → 8,9,11
11 → 10,5

* adjancecy list to keep in mind
  - keep labels unique
  - sort the list
  - convert to adjancency matrix to get graph