1. 解：a) $X = \{X_{11}, X_{12}, \cdots, X_{44}\}$ 16个

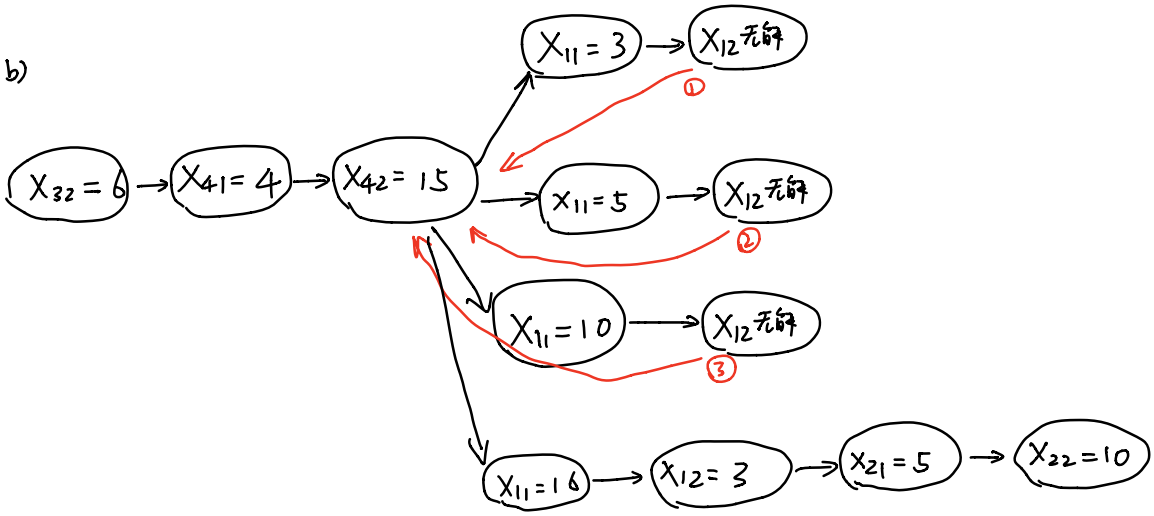
$D = \{D_{ij}, D_{ij}, \cdots, D_{ij}\}$ $X_{ij} \in D_{ij} = \{1, 2, \cdots 16\}$

$C = \{ \left(\sum_i X_{ij} = 34, \forall j\right); \left(\sum_j X_{ij} = 34, \forall i\right);$

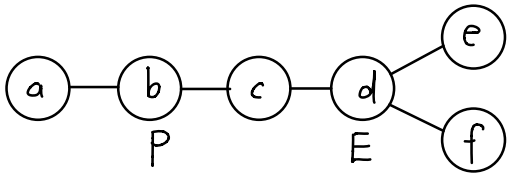
$\left(\sum_i X_{ii} = 34\right); \left(\sum_i X_{ij} = 34, j = 4 - i\right);$

$\left((X_{11}, X_{12}, \cdots, X_{44}), \text{Alldiff}\right) \}$

b)

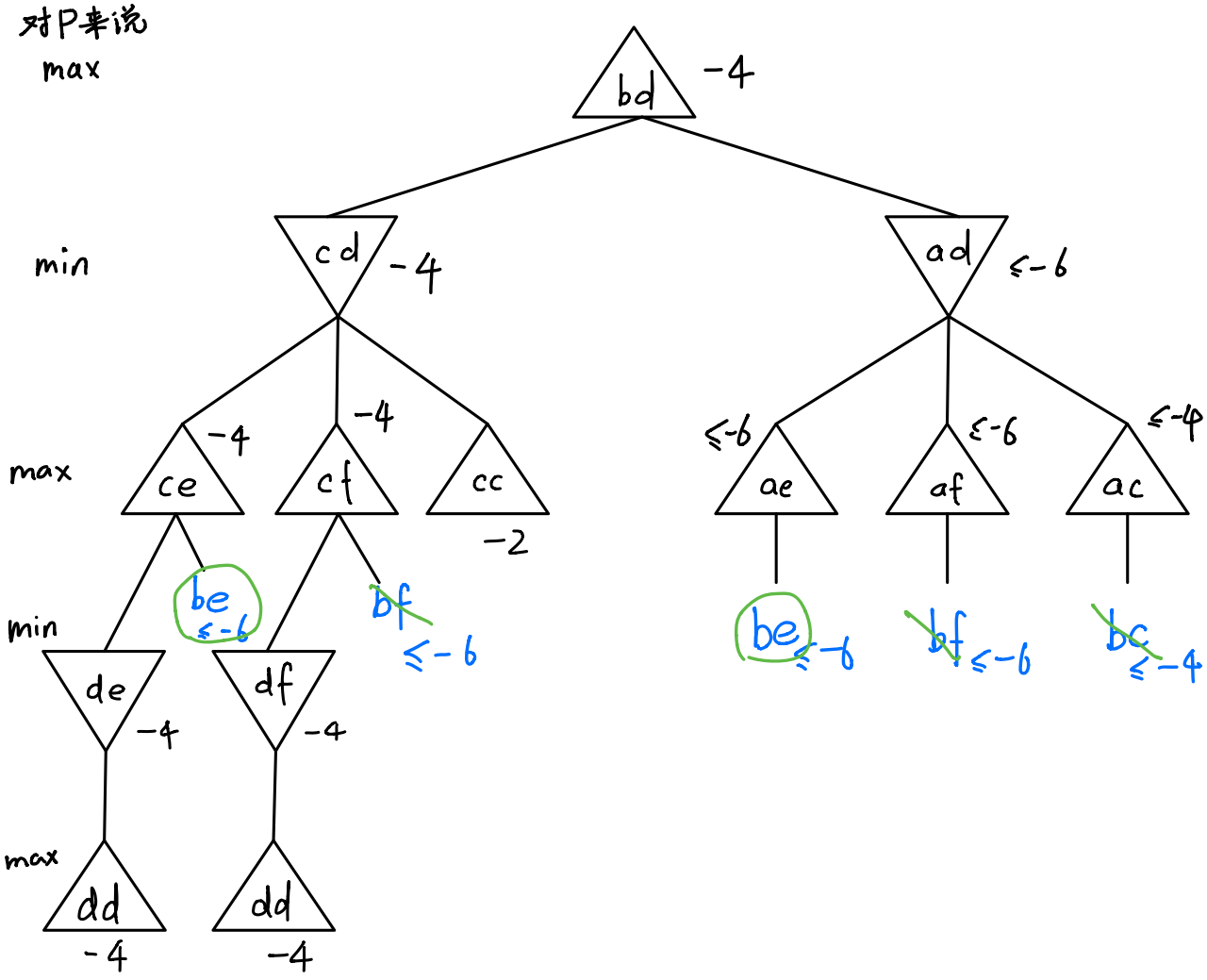


2. 解：



a)、b)、c)、e) 如图

d) 最短路径即为节点以下所有时间的取值下界，当前开始与最短路径之差为节点以下所有时间的取值上界


对P来说
max
bd
-4
min
cd
-4
ad
≤-6
max
ce
-4
cf
-4
cc
-2
ae
≤-6
af
≤-6
ac
≤-4
min
be
≤-6
bf
≤-6
de
-4
df
-4
be
≤-6
bf
≤-6
bc
≤-4
max
dd
-4
dd
-4