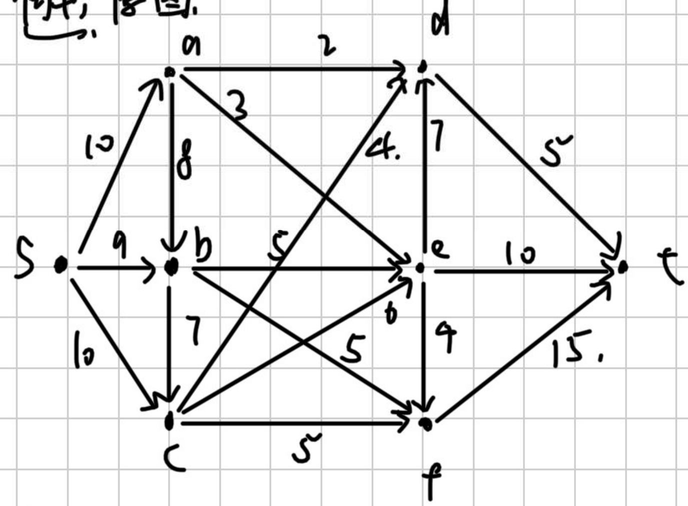
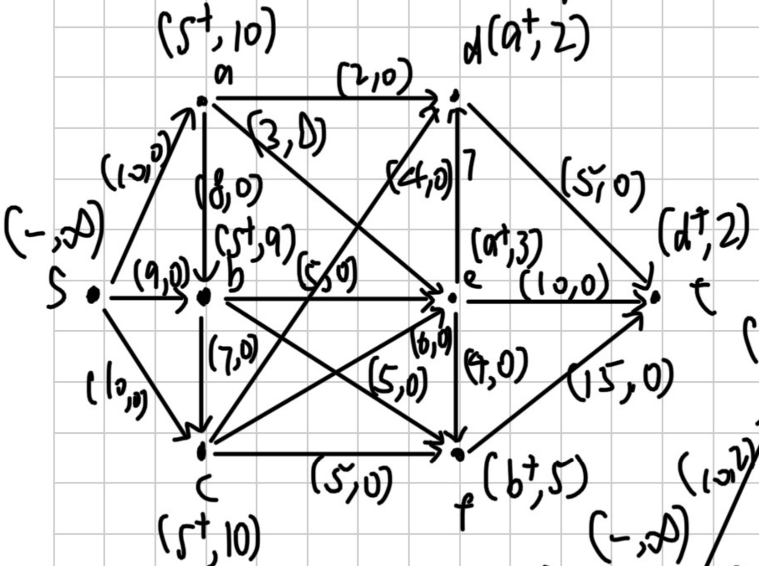
HW9

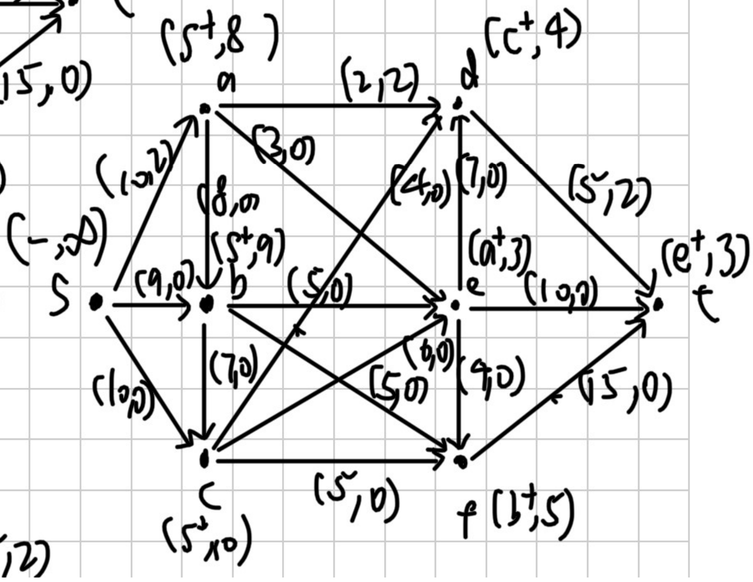
10. 解: 原图:



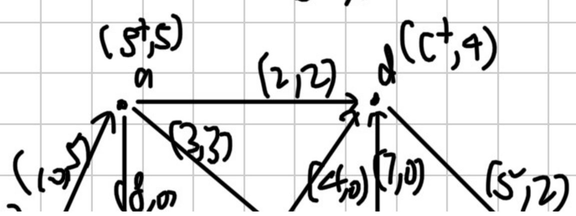
解: [Edmonds Karp]



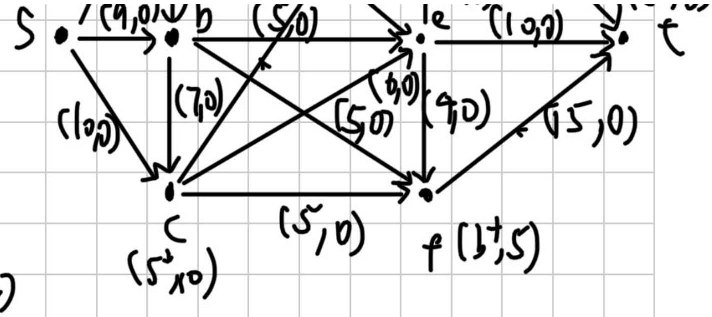
(sadt), (+2)

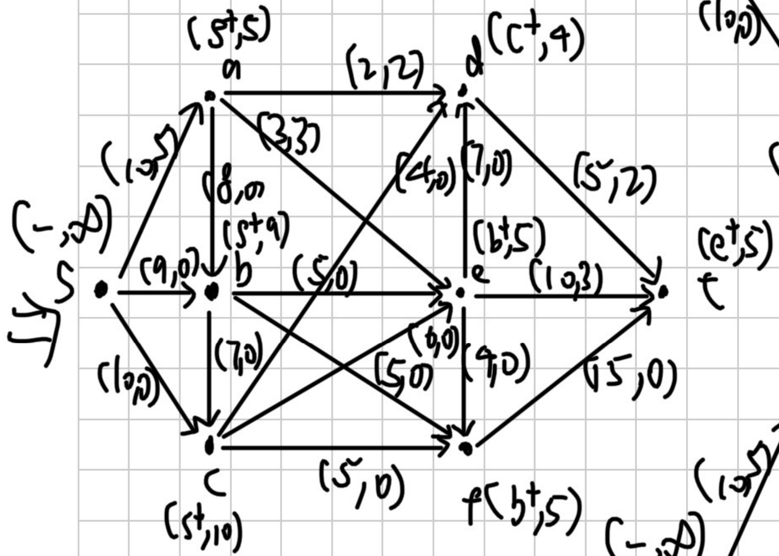


(saet), (+3) ⇒

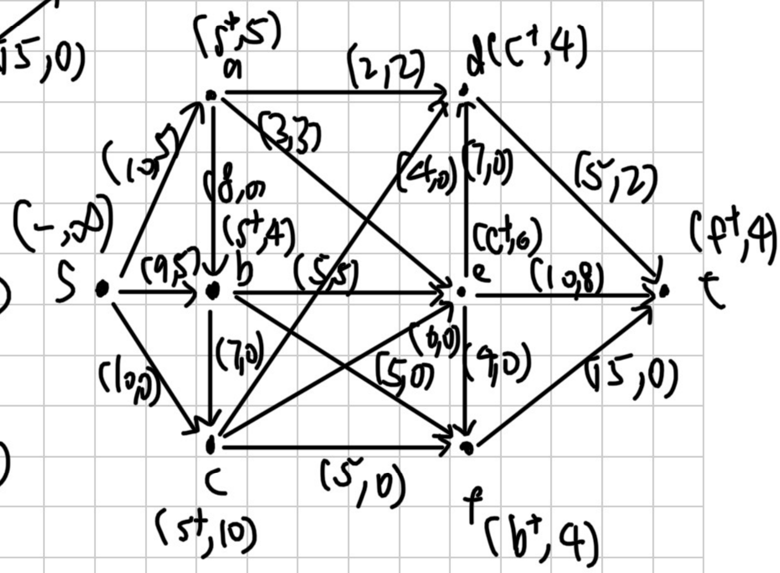


(saet),(+3)

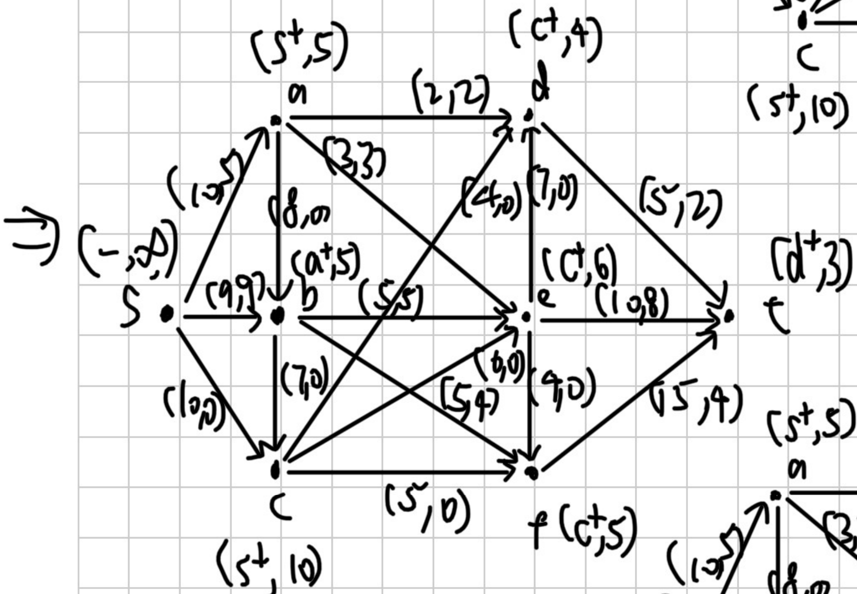




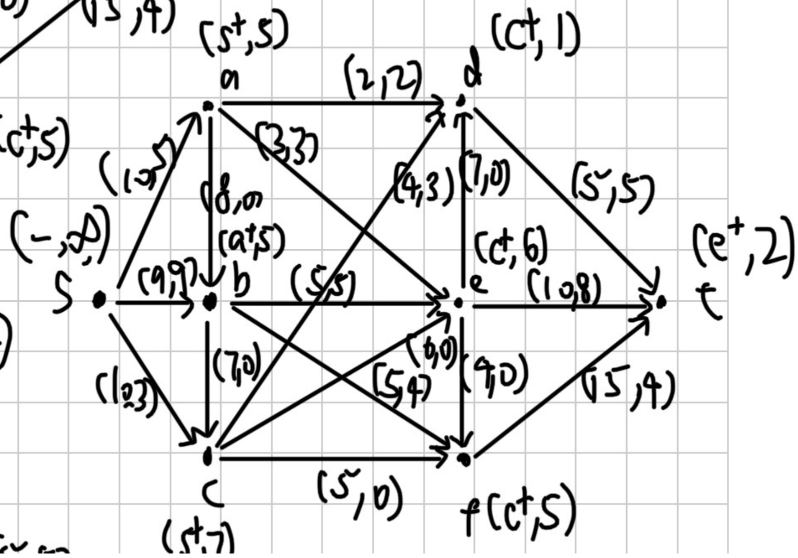
(sbet),(+5)



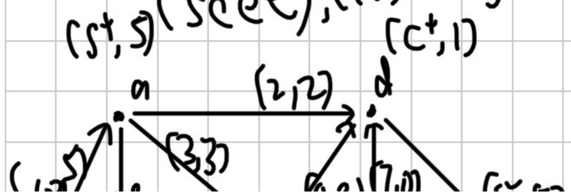
(sbft),(+4)

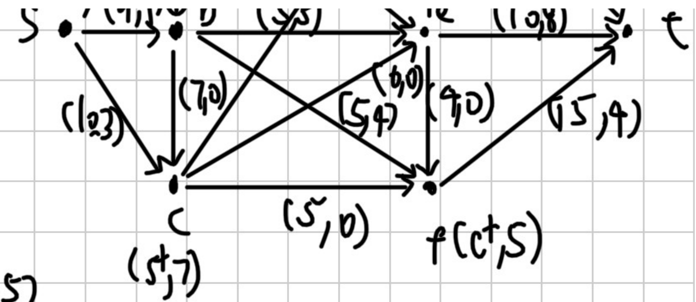


(scdt),(+3)

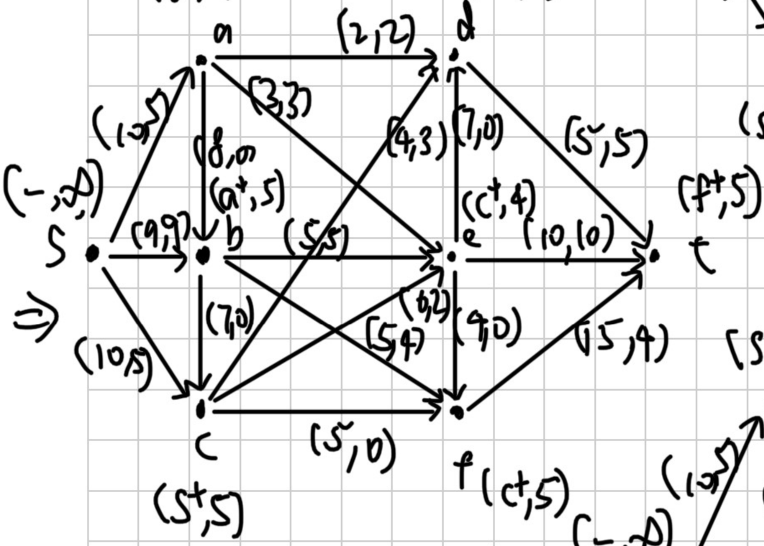


(scet),(+2)

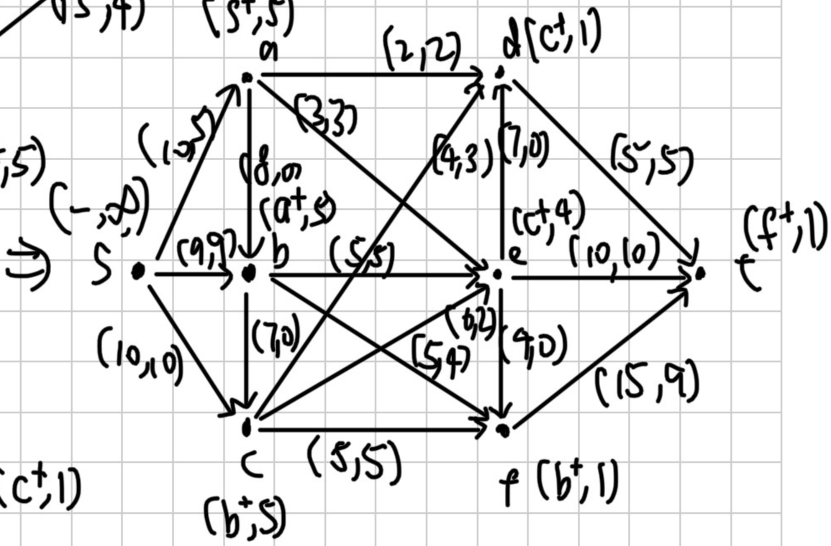




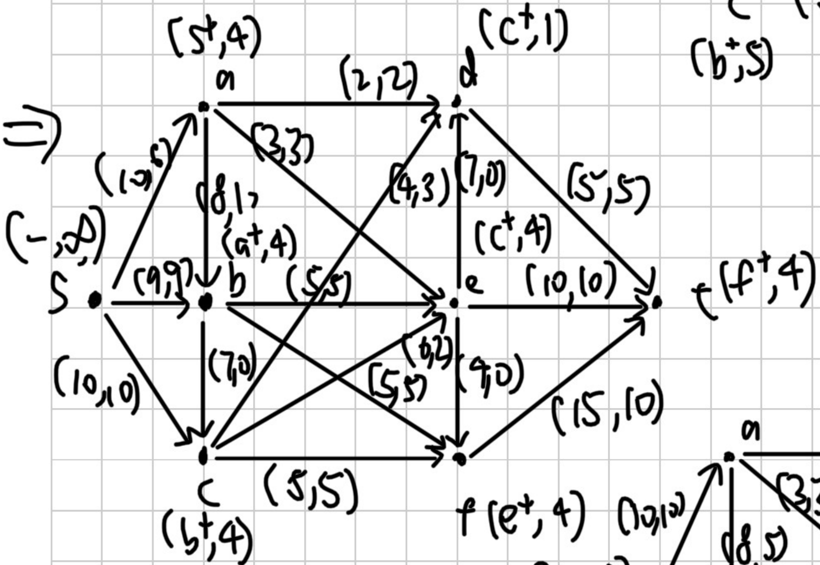
(scet),(+2)



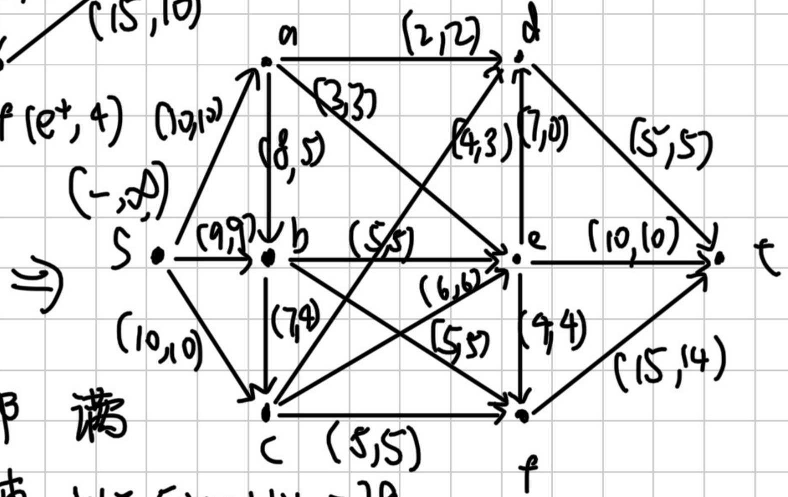
(scft),(+5)



(sabft),(+1)



(sabceft),(+4)



∗S的所有邻边都满负荷，算法结束，W=5+10+14=29

$(S,\bar{S})=\{(S,a),(S,b),(S,c)\}$，或$(S,\bar{S})=\{(d,t),(e,t),(e,f),(b,f),(c,f)\}$.

12. 证明：

令 $V_0=\{v_s\}$.

i). $\forall v_i\in V_k$，$v_j\in \Gamma(V_k)$，V_k，若 $(v_i,v_j)\in E$，且 (v_i,v_j)为红边或正向黑边，则 $V_{k+1}=V_k\cup\{v_j\}$，标记 (v_i,v_j)

ii) 若不存在满足 i) 的这样的结点，（设此时为V_e）.

则 V_e与被标记的边共同组成 N 的子图，且被标记的边为红边或正向黑边。

a) $v_t\in V_e$，则代表存在从 v_s到v_t的道路，路上只有红边或正向黑边，加上 v_{ts} 就符合条件(1)、

b).否则 $\forall e\in E(G)$ 且 $e=(v_i,v_j)$，当中 $v_i\in V_e$，$v_j\notin V_e$，e 都是绿边或反向黑边，令集合由所有满足这样条件的边组成，$V_1=V(G)-V_e$. $V_2=V_e$，满足条件(2)。

综上，((ii)中的(a)，(b)) 知命题成立。$\boxtimes$.