26.1-5

$$\max \sum_{v \in V} f(s,v) - \sum_{v \in V} f(v,s)$$

$$\begin{cases} \sum_{v \in V} f(v,u) = \sum_{v \in V} f(u,v) \\ f(u,v) \le c(u,v) \end{cases}$$

26-4

I referred to one of the solutions on CLRS

(a) If a minimum cut does not lie on (u,v), then the maximum flow can't be increased. If otherwise, we can perform Ford-Fulkerson algorithm and the flow will increase by 1. Find augmenting Path, we can use BFS. in order to find it's $O(V+E)$

(b) find a Path from s to t which contains (u,v) using BFS in $O(V+E)$. This will decrease the total flow by 1.

Generally { If $f(u,v)=0$ we don't need to do anything
If $f(u,v)>0$. we will need to update the maximum flow

We look for augmenting Path from u to v. If there's such a Path. we can augment the flow along the Path. If there's no such Path reduce the flow from s to u by augmenting the flow from u to s.