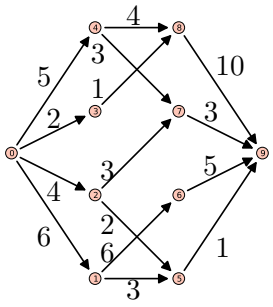
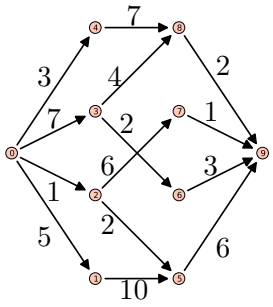
MATH 482, Spring 2013 - Homework 3
Assigned Monday 10/07. Due Wednesday 10/09.

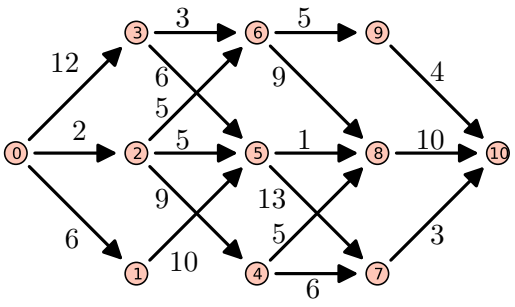
1. Find a maximum flow in the networks below. Use duality to prove optimality.



a.

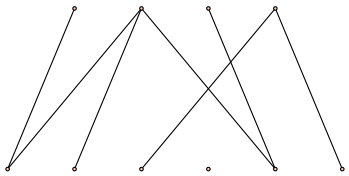


b. (*Assigned!*)

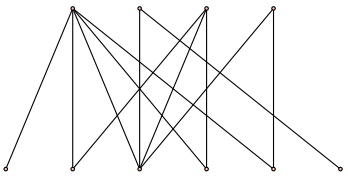


c.

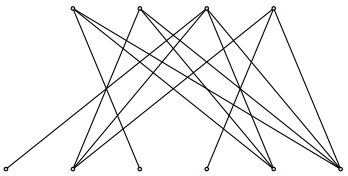
2. Find a maximum matching for each bipartite graph below. Use duality to show optimality.



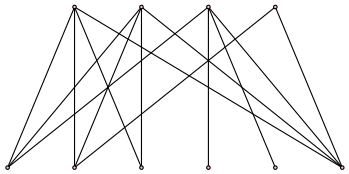
a.



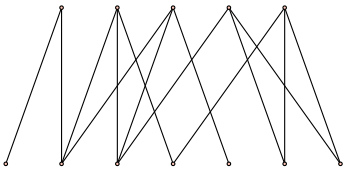
b.



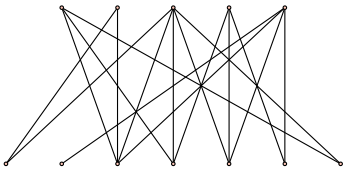
c.



d.

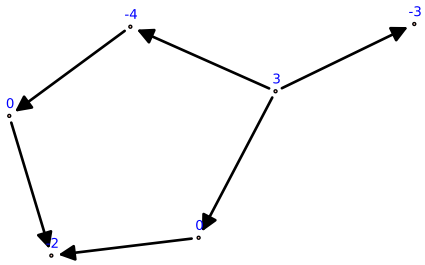


e. (*Assigned!*)

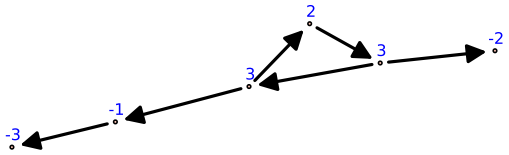


f.

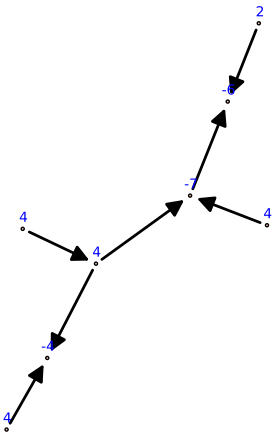
3. Find an optimal closure for each directed graph below with prescribed vertex weights.



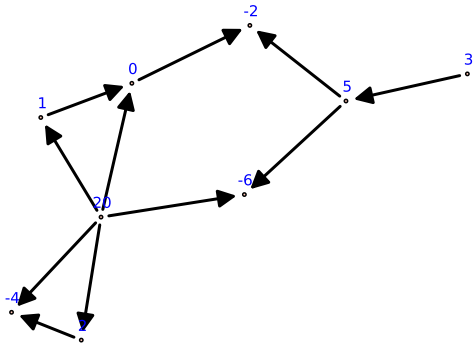
a.



b.

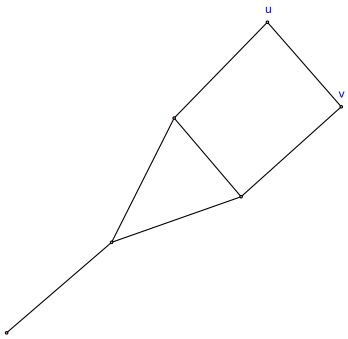


c. (*Assigned!*)

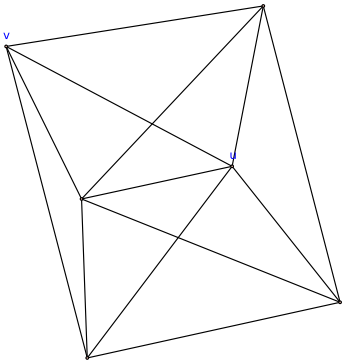


d.

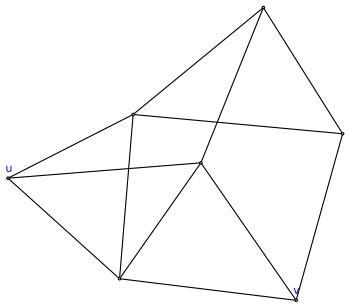
4. Determine the (local) uv-edge-connectivity of the following undirected graphs. Use duality to show optimality. (Hint: Use Menger's Theorem.)



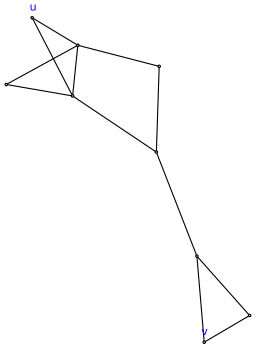
a.



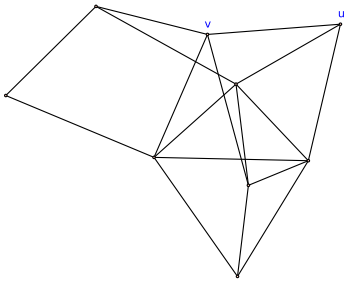
b.



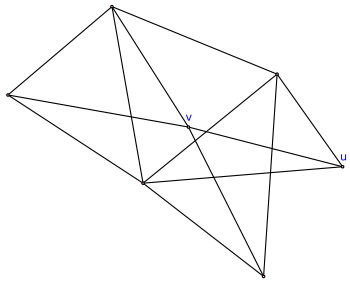
c. (*Assigned!* (as part of 4.))



d.



e.



f.

5. Determine the global edge-connectivity of the above undirected graphs.