Worksheet/Homework for Lecture 14/15

Comments and/or partial solutions are due by Monday morning. Full solutions are due by Thursday night.

Problems:

- 1. Show that if G is not complete, then G has a vertex cut.
- 2. Draw a non-complete graph which is 3-connected, but not 2-connected.
- 3. Draw a non-complete graph with $\lambda(G)=2$ and with every minimal edge cut a minimum edge cut.
- 4. Explain why $\delta(G) \geq \lambda(G)$.
- 5. Can you find a graph with $\kappa(G)=2, \lambda(G)=3, \delta(G)=2$?
- 6. Can you find a graph with $\kappa(G)=2, \lambda(G)=2, \delta(G)=3$?
- 7. Prove that if G is k-connected and $v \in V(G)$ then G-v is $(k-1) \neq connected$.
- 8. Suppose G is a graph with n vertices, and v is a vertex of degree n-1. Does every edge cut need to contain an edge incident to v? Why or why not?
- 9. Show that if G is a connected graph with at least 4 vertices, with $\delta(G)=2=\Delta(G)$, then $\lambda(G)=\kappa(G)=2$.