Last name _____

First name _____

LARSON—MATH 356—CLASSROOM WORKSHEET 11
Prufer Codes

Reminders

1. Remember to email your Notes/Classroom Worksheet prior to the next class.
2. Read ahead in our textbook. We're into Chp. 2 and trees. We will discuss Prufer codes & Cayley's Theorem.

Concepts & Notation

- Sec. 2.2: cut edge, spanning tree.

- Sec. 2.3: cut vertex, Prufer code, coding and decoding algorithm, Cayley's Theorem.

Review

1. **Claim**: A connected graph has a spanning tree.

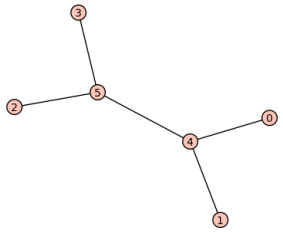
2. **Claim**: If a graph is connected then $\epsilon \geq \nu - 1$.

3. What is a *minimum weight* spanning tree?

4. How can we *find* a minimum weight spanning tree in a connected graph?

5. What is Kruskal's Algorithm?

Notes



1. (**Kruskal Lemma**). If T is a tree with non incident vertices v and w then $T + vw$ has a unique cycle.

2. (**Kruskal Lemma**). If C is a subgraph of G that is a cycle, then no edge of C is a cut edge of G.

3. (**Kruskal Lemma**). If a graph G of order ν is connected and has $\nu - 1$ edges then G is a tree.

4. Prove Kruskal's algorithm produces a minimum weight spanning tree.

5. What is a *cut vertex* (Sec. 2.3)?

6. For a tree, a vertex v is a cut vertex if and only if $d(v) > 1$.

7. What is a Prufer code for a tree?

8. How can we decode a Prufer code?

9. How many spanning trees are there of the complete graph K_n?