

## Basic Information

Make sure you understand MHC [honor code](#) and have carefully read and understood the additional information on the [class syllabus](#) and the [grading rubric](#). I am happy to discuss any questions or concerns you have!

You are always welcome to ask me for small hints or suggestions on problems.

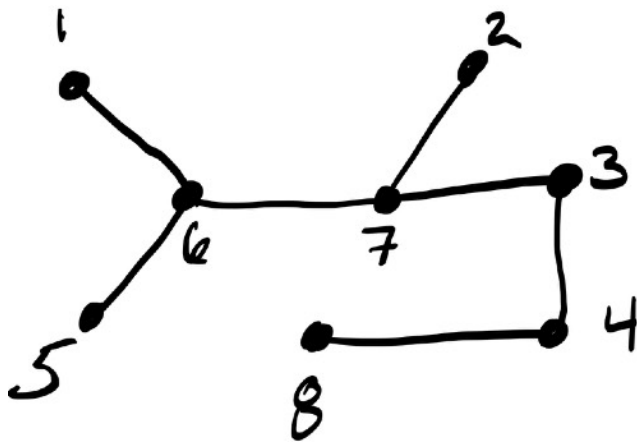
## Problems

**Wednesday Problems HW11** (Due: Tuesday, May 5 at 5 PM)

I will start grading this at 7:30 AM on May 6.

**Be sure you completely justify your answer using properties or results from class. An answer without justification will earn 0 points.**

1.     (a) Determine the Prüfer code of the tree on the next page.  
       (b) Draw the tree that corresponds to the Prüfer code (4, 4, 4, 2, 1).  
For both parts, briefly describe your process.
  
2. Let  $e$  be an edge of  $K_n$  (the complete graph on  $n$  vertices). Use Cayley's Theorem to prove that the graph with vertex set all of  $K_n$  and edge set that of  $K_n$  minus  $e$  has  $(n - 2)n^{n-3}$  spanning trees.
  
3. Let  $G$  be connected and let  $e$  be an edge of  $G$ . Prove that  $e$  is a bridge if and only if it is in every spanning tree of  $G$ .
  
4. Prove that any tree of order  $n$  contains a subtree (a subgraph which is also a tree) of order  $m$  for every  $m \leq n$ . **Hint:** This is a good problem to use induction on to formally write it up.



Tree for problem 1(a).