MATH 113: DISCRETE STRUCTURES
HOMEWORK DUE MONDAY WEEK 10

Problem 1. Draw the tree on vertex set $\{0, 1, \ldots, 9\}$ which has Prüfer code 31432293

Problem 2. Consider any table with 2 rows and $n-1$ columns; the first row holds $1, 2, 3, \ldots, n-1$; the second row holds arbitrary numbers between 1 and n. Construct a graph on nodes labeled $1, \ldots, n$ by connecting the two nodes in each column of our table.

(a) Show by example that this graph is not always a tree.
(b) Prove that if the graph is connected, then it is a tree.
(c) Prove that every connected component of this graph contains at most one cycle.