Math 451 - Spring 2018
Homework 4
Due March 1st, 2018

You know, a tree is a tree, how many more do you need to look at?

— Ronald Reagan

Turn in:

(1) Find all regular trees. Explain your answer.
(2) Let G be a connected graph. We say a vertex x is a **cut-vertex** in G provided that $G - x$ is disconnected. What are all the cut-vertices of a nontrivial tree? Prove your answer.
(3) Let G be a connected graph. Assume G contains two vertices u, v such that $G - u$ and $G - v$ are trees.
   (a) Prove that $\deg u = \deg v$.
   (b) Classify all connected graphs G with order $n \geq 3$ with the property that deleting any of its vertices gives a tree. (Hint: In this case G must be regular. What is this common degree?)
(4) Find all trees T such that $\overline{T}$ is also a tree.
(5) Exercise 4.27
(6) Exercise 4.39