# Problem Set 4

UW Math Circle

Session $\omega + 6$ (30 October 2014)

1. Find the chromatic polynomial of a pseudotree with n vertices, where the cycle has length k. (Recall that a *pseudotree* is a connected graph with one cycle.)

2. A *1-tree* is a graph that can be formed from a tree by adding an edge between two leaves.

   (a) Show that every 1-tree is a pseudotree, but give a counterexample to show that not every pseudotree is a 1-tree.

   (b) What are there more of: pseudotrees with 10 (labeled) vertices or 1-trees with 11 (labeled) vertices?

3. (Moscow City MO 1971) Does there exist a power of 2 from which you can get another power of 2 by rearranging the digits?
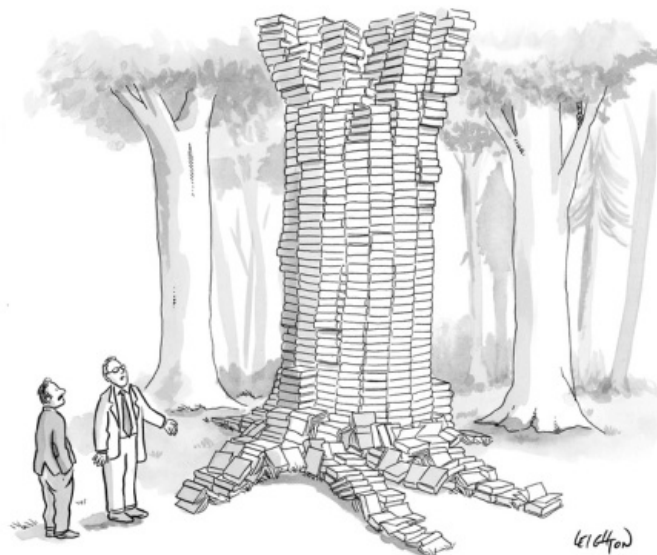
"We used your unsold copies to build a tree, but it's not the same."