This project asks you to think about complete trees and forests.

(a) A complete m-ary tree is a full m-ary tree such that every leaf is at the same level. (In other words, every interior vertex has exactly m children, and there are no branches that stop "early".) How many vertices does a complete m-ary tree of height h have?

(b) How many leaves does a complete m-ary tree of height h have?

(c) A forest of trees is a graph with no simple circuits. It's distinguished from being a tree in that it is not required to be connected. Each of the connected components is called a tree of the forest. How many edges are there in a forest of t trees containing a total of n vertices?

(d) Draw a forest with four trees and 25 vertices.

(e) How many vertices does a forest with t m-ary complete trees of height h have? (In terms of t, m, and h.)

(f) How many leaves does a forest with t m-ary complete trees of height h have?