1 Relations between \( n \) and \( h \) in a proper binary tree

We show the relations between the number of nodes \( n \) in a proper binary tree and its height \( h \) in class. Consider the following two extreme cases.

- \( n \geq 2h + 1 \). That is the case when all internal nodes form a line from the root to the height 1 node.
- \( n \leq 2^{h+1} - 1 \). This the case of a fully binary tree, in which all external nodes have the same height.