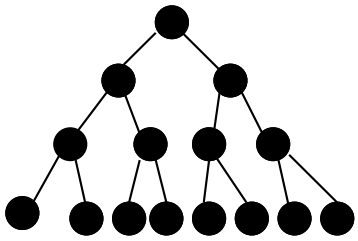
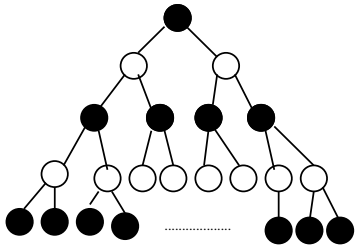
14.1-5 Describe a Red-Black tree with the largest and smallest ratio of red nodes.

To minimize the ratio of red-black nodes, make all black (possible for $n = 2^k - 1$)



To maximize the ratio of red nodes, interleave with red nodes as *real* leaves



$$\#red/n \leq n/2 + n/8 + n/32 = .656n$$

$$\#black/n \leq n/4 + n/16 + n/64 = .328n$$

$$n - n \sum_{i=1}^{max} (1/4)^i = 2n/3$$