Quicksort Analysis

Suppose that the pivot at *each stage* of the quicksort algorithm is the first quartile; i.e., it partitions the array into a left subarray of one-fourth the size and a right subarray of three-fourths the size of the original array.

1. At approximately what level of the quicksort recursion tree will you find the *deepest* leaves.

   $\frac{3}{4}^k \times n = 1$

   $n = \frac{4}{3}^k$

   $\log_{\frac{4}{3}} n = k$

2. At approximately what level of the quicksort recursion tree will you find the *shallowest* leaves.

   $\frac{1}{4}^k \times n = 1$

   $n = 4^k$

   $\log_4 n = k$