Exercise 4.3

If two routes separate that means that at a common kth bit they chose different ways. This again means that they must have different goals, differing on the kth bit. Since bit correction is going from left to right, these routes will never rejoin, since they will differ on this kth bit until their goals are reached.

Problem 4.14

Let us look at the sorting tree of some execution of the *RandQS* algorithm on some set S. Say that at some node the algorithm chooses a *good pivot* provided that it selects an element from its given subset $S' \subset S$ that is results in two subsets (elements of higher resp. lower order) with size no larger than $3/4|S'|$. We claim that the chance of this selection by the algorithm is at least $1/2$.