Algorithm Analysis
Handout 4
Deadline November 15

Exercise 4.1
Suppose that the black-height of each of the subtrees α, β, γ, δ, ε in Figures 13.5 and 13.6 (pages 320 and 321 in the textbook) is *k*. Label each node in each figure with its black-height to verify that property 5 is preserved by the indicated transformation.

Exercise 4.2
Show the red-black trees that result after successively inserting the keys 41, 38, 31, 12, 19, 8 into an initially empty red-black tree.

Exercise 4.3
Take the red-black tree that you got as result of the exercise before. Now show the red-black trees that result from the successive deletion of the keys in the order 8, 19, 12, 31, 38, 41.