The following recurrence equation gives the expected number of comparisons for Quicksort, given that the “pivot element” is selected uniformly at random from the list:

T(n) = (n – 1) +, T(0) = 0.

(a) Let S(n) = . Give Dual recurrence equations expressing T(n) in terms of S(n), and S(n) in terms of S(n-1) and T(n-1).

(b) Evaluate S(n) and T(n) for n = 1, 2, …, 12.

(c) What are the time and space requirements for computing T(n)?