1. Describe an algorithm that takes as input a list of *n* distinct integers and finds the location of the largest even integer in the list or returns 0 if there are no even integers in the list.
2. Show that x2 + 4*x* + 17 is *O(x*3*)* but that *x*3 is not *O(x*2 + 4*x* + 17*)*.
3. Give a big-O estimate for the number of operations, where an operation is a comparison or a multiplication, used in this segment of an algorithm (ignoring comparisons used to test the conditions in the for loops, where a1, a2, ..., an are positive real numbers).

m := 0

for i := 1 to n

for j := i + 1 to n

m := max(aiaj,m)

1. Use Prim’s algorithm to find a minimum spanning tree for the given weighted graph.



1. Solve these recurrence relations together with the initial conditions given.

*an* = 5*an*−1 − 6*an*−2 for *n* ≥ 2, *a*0 = 1, *a*1 = 0

1. Find a closed form for the generating function.

0, 2, 2, 2, 2, 2, 2, 0, 0, 0, 0, 0, . . .

1. Prove that f1 + f3 +· · ·+f2n−1 = f2n when n is a positive integer.
2. Give a recursive algorithm for finding the sum of the first n odd positive integers.