Final Review

1. Determine whether each of these function is Big-O (x2).
2. F(x) = 17x+11
3. F(X) = x2+1000
4. F(x) = x log x
5. Describe an algorithm that takes an input of n integers and produces as output the largest difference obtained by subtracting an integer in the list from the one following it.
6. Give a big-O estimate for the number of operations (where an operation is an addition or multiplication) used in this segment of an algorithm

t:= 0

for i:= 1 to 3

for j:= 1 to 4

t:= t +iJ

1. Find a closed form for the generating function corresponding to the sequence:

0,0,3,-3,3,-3,-3,3,-3,….

1. Show that f(x) and g(x) have the same order. Pick one

F(x) = 3x+7, g(x) = x

1. Give a big-O estimate for an increasing function f which satisfies for n = 2k =.

F(n) = f(n/2) +1 ; Hint: Use Mater Theorem

1. Solve the recurrence relation:
2. An = An-1 + 6An-2 for n greater than or less than 2 with initial conditions A0 = 3 and A1 = 6