• Prove 4n2 + 6n + 1 is O(n2)

• Prove 7n5 + 8n3 is O(n5)

• Prove (n+1)4 is O(n4)

• Prove nis O(nlog(n))

• Prove nlog(n) is (n)

• The number of operations executed by algorithm A is 96n4. The number of operations executed by algorithm B is 3n4\*2n. Determine no such that algorithm A has the same performance as algorithm B for nno.

• The number of operations executed by algorithm A is 50n5. The number of operations executed by algorithm B is 5n5\*log(n). Determine no such that algorithm A has the same performance as algorithm B for nno.

**• Give the big-Oh characterization in terms of n.**

**Input:** An array A storing n1of integers

**Output:** The sum of the prefix sums in A.

s A[0]

t s

for i 1 to n 1 do

s s + A[i]

t t + s

return t

• Given an n-element array X, Algorithm A calls Algorithm B on each element X[i]. The B Algorithm runs in O(i) time when it is called on element X[i]. What is the worse-case running time on Algorithm A?

• Order the following functions by asymptotic growth (slowest to fastest) rate: 212, nlog(n), 5000n, n6+n3+10, 9n + 10log(n), 4nlog(n) + 2n, n2+10n, 2n, log(n), 2log(n)

Due January 29th at the beginning of class (no late assignments accepted)