**Graded Assignment 2**

PART 1

General Equation of Master Theorem:

where a ≥ 1, b > 1, k ≥ 0 and p is a real number

1. T (n) = 3T (n/2) + n

Here, a = 3, b = 2, k = 1, p = 0

∴ T = θ ( nlog23) ≈ θ ( n1.585 )

1. T (n) = 64T (n/8) − n^2(log n)

It cannot be solved using Master Theorem since it does not conform to the general equation.

1. T (n) = 2nT (n/2) + n^n

It cannot be solved using Master Theorem since θ(nn) is not a polynomial.

1. T (n) = 3T (n/3) + n/2

Here, a = 3, b = 3, k = 1, i = 0

∴ T = θ ( nlog33 log0+1n) ≈ θ ( n log n )

1. T(n) = 7T (n/3) + n^2

Here, a = 7, b = 3, k = 2, i = 0

∴ T = θ ( n2 log0n) ≈ θ ( n2 )