Homework 5

1)

a)

Σ(5i) from i = 1 to n^2

summation version: Θ(log(n))
asymptotic complexity: Θ(log(n))

b)

Outer Loop: Σ(1) from i = 1 to n^2
Θ(log(n^2)) = Θ(n^2 * log(n))
Inner Loop: Σ(1) from j = 3 to j > i
Θ(log(n^2)) = Θ(n^2 * log(n))

summation version: Θ(n^2 * log(n))
asymptotic complexity: Θ(n^2 * log(n))

c)

Outer loop: Σ(i/2) while i > 1
Θ(log(n))
Inner Loop: Σ(1) from j = 1 to n^2
Θ(n^2)

summation version: Θ(n^2 * log(n))
asymptotic complexity: Θ(n^2 * log(n))

d)

Outer loop: Σ(i + sqrt(n)) from i = 0 to i >= n
Θ(i)
Inner Loop: Σ(2j) from j = 1 to j >= I
Θ(n^2)

summation version: Θ(n^2)
asymptotic complexity: Θ(n^2)