CSE 2320

Homework: Notes 1-4

1. 1.4
2. 1.5
3. 1.7
4. 1.8
5. 1.10
6. 1.11
7. 6.20
8. 6.24
9. 8.5
10. 8.10
11. 8.26
12. Write a function to determine (in logarithmic time) the range of elements in a strictly increasing sequence $a_0, a_1, a_2, \ldots, a_{n-1}$ that have $a_i = i$.
13. 2.5
14. 2.8
15. 2.15
16. 2.21
17. 2.25
18. Use the substitution method to show $\sum_{i=1}^{n} i = \Theta\left(n^2\right)$.
19. Show $T(n) = 2T\left(\frac{n}{4}\right) + \sqrt{n}$ is in $\Theta\left(\sqrt{n}\log n\right)$ using the substitution and recursion tree methods.
20. Show $T(n) = 3T\left(\frac{n}{3}\right) + n^2$ is in $\Theta\left(n^2\right)$ using the substitution and recursion tree methods.
21. Show $T(n) = 2T\left(\frac{n}{4}\right) + 1$ is in $\Theta\left(\sqrt{n}\right)$ using the substitution and recursion tree methods.