MA/CSSE 473 Day 04 Announcements and Summary

Announcements:

1. HW 2 Due Thursday at 11:55PM. Start early.
2. HW3 and HW4 have been updated for this term.

Main ideas from today:

1. Gauss's algorithm for multiplying two complex numbers replaces _____ multiplications by _____.

2. What is the recurrence relation for the Gaussian Divide and Conquer multiplication algorithm?

   What is its solution?

3. State in your own words the (Ordinary) Principle of Mathematical induction:

   To prove that property p(n) is true for all integers $n \geq n_0$, (you fill in the rest)
   (a)

   (b)

4. Prove: For all N≥0, $\sum_{i=1}^{N} i \cdot 2^i = 2^{N+1}(N-1) + 2$

5. Prove that any amount of postage that is 24 cents or more can be obtained using only 5-cent stamps and 7-cent stamps

6. An Extended Binary Tree with n internal nodes has _____ external nodes.

7. Prove the statement from the previous question using (strong) induction, based on the definition of EBT.