CS 4810 Homework Assignment 3 due Monday class Sept 11

Write regular expressions for the sets in Items 1 to 4.

1. Strings in $\{a, b, c\}^*$ with at least one a and at least one b

2. All strings of 0's and 1's where 10th symbol from end is a 1

3. All strings of 0's and 1's where every pair of adjacent 0's appears before any pair of adjacent 1's.
   hint: (no pair of adjacent 1's)(no pair of adjacent o's)

4. No occurrence of substring 001

5. Let $h(0) = a, h(1) = ab$, and $h(2) = ba$.

   (a) What are $h(0120), h(21120), h(01 * 2)$, and $h(0 + 12)$?
   (b) What are $h^{-1}(ababa)$ and $h^{-1}(a(ba)*)$?