

YOUR NAME: _____

George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Give the formal inductive definition of the set \mathcal{R} of **regular expressions**:

Basis:

Induction:

2. Apply the operator L that associates to a given regular expression the corresponding regular language recursively (**showing all steps**) to discover the regular language $L(b(a^*bc^* + ac))$:

$$L(b(a^*bc^* + ac)) =$$

3. Write a regular expression for the language L over the alphabet $A = \{a, b, c\}$ consisting of all strings that contain the substring aba and end in c .

4. The equation $(RR)^* = R^*R^*$ between regular expressions is _____

Proof: