Concepts of Regular Expressions - I

* This form will record your name, please fill your name.

1. Select the regular expression equivalent to the regular expression ab*+a+b*:
(1 Point)

- ( ) (ab)*+a+(b)*
- ( ) a(b)*+a+(b)*
- ( ) (ab)*+(a+b)*
- ( ) ((ab)*+a+b)*

2. Your answer to the above question is because:
(1 Point)

- ( ) the precedence of the regular expression operators is: first *, then . (concatenation), then + (from high to low)
- ( ) the regular expression is read from left to right

3. A possible regular expression to represent all the strings over {0,1} with an even number of 0's is:
(1 Point)

- ◯ (01*0)*
- ◯ 1*+(1*01*01*)*
- ◯ 1*+(1*01*0)*

4. When simplifying RE = (0+1)*1(0+1)(0+1) + (0+1)*1(0+1) to (0+1)*1(0+1)(e+0+1) we can apply a sequence of algebric regular expression properties [note that 'e' is representing the empty string]. Select the one applied to the following step: (0+1)*1(0+1)(0+1) + (0+1)*1(0+1) = (0+1)*(1(0+1)(0+1) + 1(0+1))
(1 Point)

- ◯ distributive of the concatenation (.) over the union (+)
- ◯ commutativity of the union (+)

5. Select the one applied to the following step: (0+1)*(1(0+1)(0+1) + 1(0+1)) = (0+1)*1((0+1)(0+1) + (0+1))
(1 Point)

- ◯ identity of the 1
- ◯ distributive of the concatenation (.) over the union (+)

6. Select the one applied to the following step: (0+1)*1((0+1)(0+1) + (0+1)) = (0+1)*1(0+1)((0+1) + e)
(1 Point)

- Identity of the concatenation followed by distributive of the concatenation over the union
- Identity of the concatenation

7. Select the one applied to the following step: (0+1)*1(0+1)((0+1) + e) = (0+1)*1(0+1)(e+0+1)
(1 Point)

- precedence of the 'e'
- associativity and commutativity of the union

8. Indicate if the following equalities are TRUE or FALSE:
a) (R+S)* = R* + S*
b) (RS+R)*R = R(SR+R)*
c) (RS+R)*RS = (RR*S)*
(1 Point)

- a) TRUE; b) FALSE; c) FALSE
- a) FALSE; b) FALSE; c) FALSE
- a) FALSE; b) TRUE; c) FALSE
- a) TRUE; b) TRUE; c) TRUE