

Quiz: Regular Expressions (simplifying, Identities, its relation to FA)

- Due Mar 30 at 11:59pm
- Points 50
- Questions 5
- Available Mar 24 at 12am - Apr 5 at 11:59pm
- Time Limit None
- Allowed Attempts 2

This quiz was locked Apr 5 at 11:59pm.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	5 minutes	50 out of 50
LATEST	Attempt 2	5 minutes	50 out of 50
	Attempt 1	57 minutes	40 out of 50

❗ Correct answers are no longer available.

Score for this attempt: 50 out of 50

Submitted Mar 30 at 8:46pm

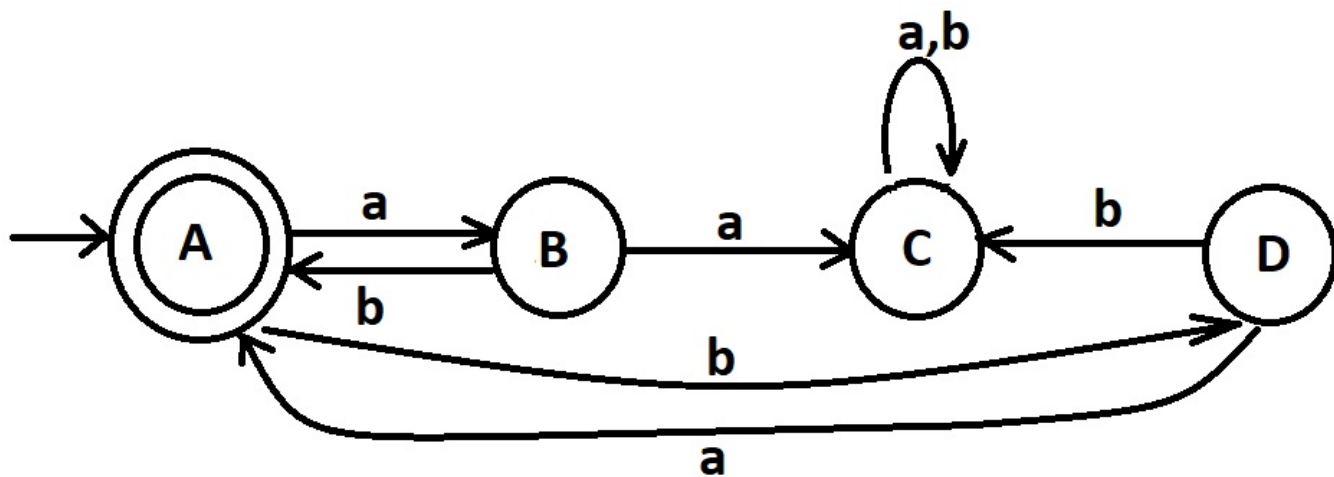
This attempt took 5 minutes.



Question 1

10 / 10 pts

The Deterministic Finite Automaton (DFA) is given as below:



Write down the simplified result of the regular expression for this PDA.

Your Answer:

$(ab+ba)^*$



Question 2

10 / 10 pts

Using the identities of regular expressions, we are to simplify the following expression:

$$R = a^* + a^*b(\varepsilon + aa^*b)^*aaa^*$$

Which one(s) will NOT be equivalent to this regular expression, R?

- ☐ $a^* + a^*b(aa^*b)^*aaa^*$
- ☐ $\varepsilon + aa^* + a^*ba(a^*ba)^*aa^*$
- ☐ $\varepsilon + (\varepsilon + a^*ba(a^*ba)^*)aa^*$
- ☐ $\varepsilon + (a^*ba)^*aa^*$
- ☐ $\varepsilon + (a + ba)^*a$
- ☒ $(a + ba)^*a$

[Response](#)



Question 3

10 / 10 pts

Assume that R, S, and T are regular expressions and ε is the empty string and \emptyset is the empty set.

Select all the identities of that are correct:

- ☐ $\emptyset^* = \emptyset$
- ☐ $\varepsilon^* = \emptyset$
- ☒ $\emptyset^* = \varepsilon$
- ☒ $\varepsilon^* = \varepsilon$
- ☐ $(R^*)^* = R$
- ☐ $R \cdot R^+ = R^*$
- ☒ $\varepsilon + R \cdot R^* = R^*$
- ☐ $(R \cdot S)^* \cdot R = R \cdot (R \cdot S)^*$
- ☒ $(R+S)^* = (R^* \cdot S^*)^*$



Question 4

10 / 10 pts

The regular expression for the set $\{b, ba, baa, baaa, \dots\}$ is as $R=ba^+$.

- ☐ True
- ☒ False



Question 5

10 / 10 pts

Assume that R and S are both regular expressions, then which one(s) would NOT be true.

- ☐ $R + S$ is a regular expression
- ☐ $R+S^*$ is a regular expression
- ☐ $R^* \cdot S^*$ is a regular expression
- ☐ $(R+S)^*$ is a regular expression.
- ☒ None

Quiz Score: 50 out of 50