

QUIZ 8 (MATH2301, 2025)

Name: _____

UID: _____

(1) (4 points) Select either true or false.

(a) In an NFA, arrows are allowed to have ϵ as a label.

True

False

(b) Every NFA is also a DFA.

True

False

(c) For an NFA with 5 states, there exists an equivalent DFA that has at most 32 states.

True

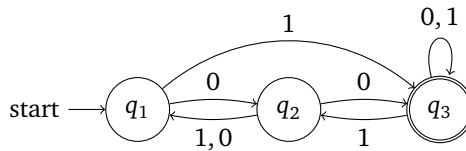
False

(d) There is a regular expression whose language is not recognised by any DFA.

True

False

(2) (6 points) Consider the NFA shown below.



Describe the complete run of the NFA on the input string $w = 0010$. The n th step in your description should be the set of all possible states after reading n letters of w . Write whether the string is accepted or rejected.

1. SOLUTIONS

(1) True or false

(a) True

(b) False

(c) True

(d) False

(2)

Step	Possible states
0	q_1
1	q_2
2	q_1, q_3
3	q_2, q_3
4	q_1, q_3

Since q_3 is an accept state, the string is accepted.