0.13

Show that every graph with two or more nodes contains two nodes that have equal degrees.

1.3

The formal description of a DFA M is $(\{q_1, q_2, q_3, q_4, q_5\}, \{u, d\}, \delta, q_3, \{q_3\})$, where δ is given by the following table. Give the state diagram of this machine.

	u	d
q_1	q_1	q_2
q_2	q_1	q_3
q_3	q_2	q_4
q_4	q_3	q_5
q_5	q_4	q_5

1.4f

The following language is the intersection of two simpler languages. In each part, construct DFAs for the simpler languages, then combine them using the way we discussed in the class to give the state diagram of a DFA for the language given. In all parts, $\Sigma = \{a, b\}$.

$$\{w|w \text{ has an odd number of } a\text{'s and ends with a } b\}$$