HW 1 CMSC 452. Morally DUE Sep 9

1. (0 points) What is your name? Write it clearly. Staple your HW. When is the midterm? Where is the midterm? IMPORTANT- I WANT TO MAKE SURE I HAVE YOUR CORRECT EMAIL ADDRESSES. I HAVE EMAILED ALL OF YOU USING WHAT I CURRENTLY THINK IS YOUR EMAIL ADDRESS BUT IF YOU DIDN'T GET IT THEN EMAIL ME ASAP TO GIVE ME YOUR REAL EMAIL ADDRESS.

2. (20 points) Write a DFA for the language

$$\{w \mid aaab \text{ is a prefix of w }\}$$

3. (20 points) Write a DFA for the language

$$\{w \mid aaab \text{ is a suffix of w }\}$$

4. (20 points) Write a DFA for the language

$$\{w \mid w \equiv 0 \pmod 4\}.$$

5. (30 points)

   (a) Compute $10^a \pmod{13}$ until the sequence starts to repeat.

   (b) How many states does a DFA for the following language have (NOTE- do not write a DFA for this language)

$$\{w \mid w \equiv 0 \pmod{13}\}$$