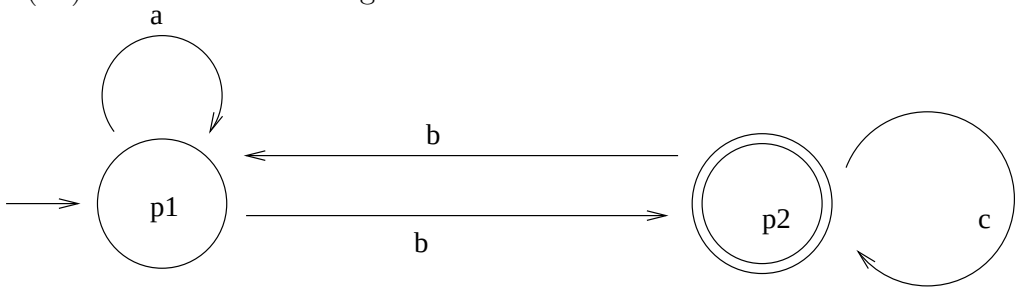
Cpt S 317 Homework #5

Please print your name!

1. Construct a Λ-NFA accepting language $((ab^*a + ba)^* + a^*b)^*$.
2. According to the proof of the Kleene's Theorem, find a regular expression for $L(M)$ where M is a DFA given as below:



3. Show that $L = \{0^n 1^m : n \geq 1, m \geq 1, n \leq m\}$ is not regular.
4. Show that $L = \{xx^R x : x \in (a + b)^*\}$ is not regular. (x^R is the reverse of x, e.g., $aab^R = baa$)
5. Which of the following languages are regular? Prove your answer.
   (1). $\{0^m 1^n 0^{m+n} : m \geq 1, n \geq 1\}$.
   (2). $\{0^m 0^n 0^{m+n} : m \geq 1, n \geq 1\}$.
   (3). $\{xwx^R : x \in (0 + 1)^*, w \in (0 + 1)^*\}$.
   (4). $\{0^n 1^m : n \geq 1, m \geq 1, n > m\}$