

Name: \_\_\_\_\_

Grade: \_\_\_\_\_ &lt;-- instructor use

Prove that the algorithm for constructing an equivalent DFSM from a NDFSM is correct. (Continue on the back)

**Lemma:** Let  $w$  be any string in  $\Sigma^*$ , let  $p$  and  $q$  be any states in  $K$ , and let  $P$  be any state in  $K'$ . Then:

$(q, w) \vdash_M^* (p, \epsilon)$  iff  $((\text{eps}(q), w) \vdash_{M'}^* (P, \epsilon)$  and  $p \in P$ ).

**Proof of base case (if)**

**Proof of base case (only if)**

**Induction step: restatement in terms of shorter strings**

**Induction step (if)**

**Induction step (only if)**

**Use the Lemma to prove theorem:  $L(M) \subseteq L(M')$**

**Use Lemma to prove theorem:  $L(M') \subseteq L(M)$**

Tell your instructor about anything from today's session (or from the course so far) that you found confusing or still have a question about. If none, please write "None".