CISC 301
Homework 9
Due on **Thursday**, December 1, 2005
NO LATE SUBMISSIONS

1. (10 x 4 = 40 points)

Use the pumping lemma to show that the following sets are not regular.

a. $\{a^l b^m c^n \mid l = 100, m > l, n > m\}$.

b. The set of strings of the form ww^R where $w \in \{a, b\}^*$ and w^R is the reverse of w (e.g., if $w = abbab$ then $w^R = babba$). Thus, abbabbabba is included in this set but abab is not.

c. The set of strings of the form $a^{n_1} b^{n_2} c^{n_3} d^{n_4}$, where $n_1 = n_3$ or $n_2 = n_4$. $(n_1, n_2, n_3, n_4 \geq 1)$

d. $\{a^n b^m \mid n \neq m\}$.