Homework #6, part 2 due 02/26

1. Consider the following language $B = \{< X, Y > | X \text{ and } Y \text{ are regular languages and } X \subseteq Y\}$. Show that B is decidable.

2. Using the fact that E_{DFA} is a decidable language prove that C is decidable, where $C = \{< R > | R \text{ is a regular expression describing a language containing at least one string } w \text{ that has 010 as a substring}\}$.

3. Rank the following functions: $\lg\lg n, (\sqrt{2})^{\lg n}, n^3, 2^{2^n}, n2^n, n\lg n, n, (\frac{3}{2})^n$ by order of growth; that is find an arrangement $g_1, g_2, \ldots, g_8$ of the functions satisfying $g_1 = O(g_2), g_2 = O(g_3), \ldots, g_7 = O(g_8)$.