Instructions: Answer all questions concisely.

1. Prove or disprove the following:
   - $\pi_A(R \cup S) = \pi_A(R) \cup \pi_A(S)$
   Assume that $A$ is an attribute in the schema of $R$ and the schemas of $R$ and $S$ are identical.

2. Consider the difference operator, “-”, whose meaning is given as follows: Given any two relations, $D$ and $D'$, with the same schema, $D - D'$ is the set of all tuples in $D$ but not in $D'$. That is, $D - D' = \{ t \in D | t \notin D' \}$
   Show that the difference operator cannot be simulated with SPCU algebra. (Hint: use the monotonicity property of SPCU algebra.)