Exercises Fuzzy Logic
December 16, 2010

21. Let T be a t-norm and R a fuzzy relation. Show that the following holds: R is T-transitive if and only if $R \circ_T R \subseteq R$.

22. Let T be a t-norm and R a fuzzy relation. Show that $R \cap_T R^{-1}$ is a symmetric fuzzy relation.

23. Let S be a t-conorm and R a fuzzy relation. Show that $R \cup_S R^{-1}$ is a symmetric fuzzy relation.

24. Compute the two compositions of fuzzy relations on slide 92.

25. For the fuzzy relation R given on slide 111 and arbitrary fuzzy sets A and B compute the image of A and the pre-image of B with respect to each of the t-norms $T_{\mathbf{M}}$, $T_{\mathbf{P}}$, $T_{\mathbf{L}}$ and $T_{\mathbf{D}}$.

26. Verify the results shown on slides 117–122.