Due Wed, April 23rd, at 11:59pm on Gradescope

Please show your work. Where it makes sense, your solutions should be written in full sentences. Recall that proof-writing problems will be graded on correctness as well as clarity and exposition.

From Enderton:

1. p. 53, Exercises 13, 14, 18
2. p. 55, Exercise 31
3. p. 61-62, Exercises 37, 41
4. p. 65, Exercise 57: Assume R, S, T are all relations. When the answer is yes, give a proof. When the answer is no, give a counterexample.

Additional problems:

5. Let $\mathbb{N} = \{0, 1, 2, ..., n, ...\}$ be the set of natural numbers. Show that for every $n \in \mathbb{N}$, the sets V_n and $V_{\omega+n}$ (from pages 7-8) are transitive. Assume there are no atoms, i.e. $V_0 = \emptyset$. Note that by $\omega + 0$ we mean ω.
6. Let Q be the equivalence relation on $\mathbb{R} \times \mathbb{R}$ defined in Exercise 41 on page 62. Show that there is a function $F\colon (\mathbb{R} \times \mathbb{R})/Q \to (\mathbb{R} \times \mathbb{R})/Q$ such that $F([\langle a, b\rangle]_Q) = [\langle a^2 + b^2, 2ab\rangle]_Q$.