Many-Valued Logics (Autumn 2013)

Fourth homework assignment

- Deadline: 3 October — at the **beginning** of class.
- Grading is from 0 to 100 points; you get 10 points for free.
- Success!

`30 pt` **Exercise 1.** (Axiomatic extensions and algebraizability)
Show that if a deductive system $\mathcal{S}$ is algebraizable, then all its axiomatic extensions are also algebraizable.

`30 pt` **Exercise 2.** (Sequent calculus)
Prove that the rules $\cdot l$, $\vee l$, $\backslash r$, and $\wedge r$ on page 269 of CM5 are *invertible* i.e., using the other rules of **FL** one can prove that from their conclusion the premises follow.

`30 pt` **Exercise 3.** (Algebraic Semantics)
Find the lowest classes $\mathscr{P}_n$ or $\mathscr{N}_n$ in the substructural hierarchy of page 272 of CM5 to which each of these inequalities belong:

- $x(x\backslash y) = x \wedge y$,
- $1 \leq (x\backslash y) \vee (y\backslash x)$,
- $(x\backslash y)\backslash y = (y\backslash x)\backslash x$