Exercise Sheet 4
Propositional Logic – Classical Reasoning & Semantics

Note that question 4 is marked as being assessed.

You are allowed to make use of the derived rules mentioned in the lectures.

1. Provide an intuitionistic Sequent Calculus proof of $(A \lor \neg A) \to (\neg\neg A \to A)$.
2. Provide intuitionistic Sequent Calculus proofs that $((P \to \bot) \to P) \to P$ (this is an instance of what is known as Peirce's law) implies $\neg\neg P \to P$, and vice versa.
3. Provide a classical proof of $\neg(A \land B) \to (\neg A \lor \neg B)$ in any of the three classical systems we have seen in the lectures.
4. **assessed:** Provide a classical Sequent Calculus proof of $((P \to Q) \to P) \to P$ using classical sequents (what we referred to as the 2nd classical version of the Sequent Calculus in the lectures).