Reading
*An Introduction to Formal Logic*, chapters 26–29, 32–33.

1 Self-marked exercises

Do the following questions from the end-of-chapter exercises in *An Introduction to Formal Logic*. Then, when you have completed them, carefully check your answers against the answers available on the book’s website at http://www.logicbook.net.

- Exercises 26: last five questions.
- Exercises 27: questions for the q-valuation whose domain includes Romeo.
- Exercises 29: questions B3–6.
- Exercises 33: odd numbers of A.

Correct your own work in red, for the marker to review. In the box below, note any residual queries or problems you have with these self-marked exercises (use a continuation sheet if you have more queries than you can mention here).

Queries
2 Further exercises

A. Use QL trees to show the following (these are called prenexing rules):
   1. \( \forall x (Fx \supset Ga) \) is logically equivalent to \( \exists x (Fx \supset Ga) \).
   2. \( \exists x (Fx \supset Ga) \) is logically equivalent to \( \forall x (Fx \supset Ga) \).
   3. \( \forall x (Ga \supset Fx) \) is logically equivalent to \( (Ga \supset \forall x Fx) \).
   4. \( \exists x (Ga \supset Fx) \) is logically equivalent to \( (Ga \supset \exists x Fx) \).

B. Consider this argument: \( (\forall x Fx \equiv \forall x Gx) \therefore \forall x (Fx \equiv Gx) \). Is it q-valid? If so, show it is so using a tree. If not, give a q-valuation which shows that it is invalid.

C. Consider the sentence “The Holy Roman Emperor is holy”.
   1. Translate it into QL as best you can.
   2. Give three (consistent!) QL sentences which are inconsistent with the QL sentence you wrote down in answer to the previous question. Give natural English translations for each of these three sentences.