

Mathematics 2084H – Recreational mathematics

TRENT UNIVERSITY, Winter 2009

Assignment #3

Due on Friday, 13 February, 2009.

Sort-of-sudoku

1. Devise a sudoku puzzle which has only one solution, with as few cells filled in initially as you can. [4]
2. Devise regions for a  $5 \times 5$  gerechte design which cannot be solved, *i.e.* such that every attempt to fill the cells using the digits 1–5 must duplicate some digit in a row, column, or region of the design. [3]

*Note:* In solving **2**, it may help to note that the regions of a gerechte design need not be contiguous.

3. Find a pair of mutually orthogonal  $5 \times 5$  gerechte designs whose regions are those outlined in bold in the diagram below, or show that there is no such pair. [3]

