

Mathematics 2200H – Mathematical Reasoning

TRENT UNIVERSITY, Fall 2024

Assignment #1

A Magical Square?

*Due on Friday, 13 September..**

Consider the following 4×4 matrix,

7	18	11	9
13	24	17	15
3	14	7	5
10	21	14	12

and the following procedure applied to the matrix:

Step 1. Pick any number in the matrix.

Step 2. Pick any other number in the matrix that is not in the row or column the first number is in.

Step 3. Pick any other number in the matrix that is not in a row or column that the first or second number is in.

Step 4. Pick the number in the matrix that is not in a row or column that the first, second, or third number is in.

It turns out that the four numbers selected in the process, no matter what choices were made within the rules, will add up to 50. Your task, should you choose to accept it, is to answer the following question:

1. Why does the given procedure, when applied to the given matrix, always select four numbers that add up to 50? [10]

Hint: What are the relationships between the columns of the matrix and between the rows of the matrix? How could this matrix have been generated?

* Please submit your solutions, preferably as a single pdf, via Blackboard's Assignments module. If that fails, please submit them to the instructor on paper or via email to sbilaniuk@trentu.ca as soon as you can,