

## Solutions to Attendance Quiz # 2 for Dr. Z.'s MathHistory for Lecture 2

1. Without peeking, construct a  $5 \times 5$  magic square.

**Ans. to 1:** We first set-up the **scaffold**

|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
|   |    |    | 1  |    |    |    |
|   |    | 2  |    | 6  |    |    |
|   | 3  |    | 7  |    | 11 |    |
|   | 4  |    | 8  | 12 |    | 16 |
| 5 |    | 9  |    | 13 | 17 | 21 |
|   | 10 |    | 14 |    | 18 | 22 |
|   |    | 15 |    | 19 |    | 23 |
|   |    |    | 20 |    | 24 |    |
|   |    |    |    | 25 |    |    |

We now “reflect” on each row and column, putting the integers outside the  $5 \times 5$  grid in their proper place, getting

|    |    |    |    |    |
|----|----|----|----|----|
| 3  | 20 | 7  | 20 | 11 |
| 16 | 8  | 25 | 12 | 4  |
| 9  | 21 | 13 | 5  | 17 |
| 22 | 14 | 1  | 18 | 10 |
| 15 | 2  | 19 | 6  | 23 |

2. In what century did Kurt Gödel live? What is he famous for?

**Ans. to 2:** The 20-century. He was the **greatest logician of all times** and revolutioned mathematics, by proving that any sufficiently rich system of axioms is ‘incomplete’, i.e. there are statements that are neither provable, nor disprovable, that he called *undecidable*.

**Comment:** Only **two** people (out of 31) got it!

3. In what century did Alan Turing live? What is he famous for?

**Ans. to 3:** The 20-th century. Broke the Engima code in WW2 that helped end the war, and founded the theory of computation, by inventing the so-called *Turing machine*.

**Comment:** Only 12 people (out of 31) got it.