

18.700. Problem Set 2

Due date: September 26 (Monday) in lecture or in my office before noon on due date. Late homeworks will be accepted only with a medical note or for some other MIT approved reason. You may work with others, but the final write-up should be entirely your own and based on your own understanding.

Each problem is worth 5 points.

Problem 1: 0.4.6.(c) and (d)

Problem 2: 0.5.2.(d)

Problem 3: 0.5.6. (if true, briefly explain why; if false, give a counterexample)

Problem 4: 0.6.11.

Problem 5: Show that any 3×3 upper triangular matrix with zeros on the diagonal is nilpotent. Generalize.

Problem 6: 0.6.12.

Problem 7: 0.6.16. (check only the multiplicative inverse and give an example showing that the multiplication in H is not commutative)

The following problems are recommended for additional practice. They should *not* be turned in with the homework and they will not count towards the homework score. Section 0.4: 4,8,9,12 . Section 0.5: 4,7. Section 0.6: 1(d)(e),4,5,10,17,19,22,23.