

Chapter 1

Definitions and first examples

Solution 1.1:

Solution 1.2:

Solution 1.3:

Solution 1.4:

Solution 1.5:

Solution 1.6:

Solution 1.7:

Solution 1.8:

Solution 1.9:

Solution 1.10:

Solution 1.11:

Solution 1.12:

Chapter 2

Ideals and homomorphisms

Solution 2.1:

Solution 2.2:

Solution 2.3:

Solution 2.4:

Solution 2.5:

Solution 2.6:

Solution 2.7:

Solution 2.8:

Solution 2.9:

Solution 2.10:

Solution 2.11:

Solution 2.12:

Chapter 3

Solvable and nilpotent Lie algebras

Solution 3.1:

Solution 3.2:

Solution 3.3:

Solution 3.4:

Solution 3.5:

Solution 3.6:

Solution 3.7:

Solution 3.8:

Solution 3.9:

Solution 3.10:

Chapter 4

Theorems of Lie and Cartan

Solution 4.1:

Solution 4.2:

Solution 4.3:

Solution 4.4:

Solution 4.5:

Solution 4.6:

Solution 4.7:

Solution 4.8:

Chapter 5

Killing form

Solution 5.1:

Solution 5.2:

Solution 5.3:

Solution 5.4:

Solution 5.5:

Solution 5.6:

Solution 5.7:

Solution 5.8:

Chapter 6

Complete reducibility of representations

Solution 6.1:

Solution 6.2:

Solution 6.3:

Solution 6.4:

Solution 6.5:

Solution 6.6:

Solution 6.7:

Solution 6.8:

Solution 6.9:

Chapter 7

Representations of $\mathfrak{sl}(2, F)$

Solution 7.1:

Solution 7.2:

Solution 7.3:

Solution 7.4:

Solution 7.5:

Solution 7.6:

Solution 7.7:

Chapter 8

Root space decomposition

Solution 8.1:

Solution 8.2:

Solution 8.3:

Solution 8.4:

Solution 8.5:

Solution 8.6:

Solution 8.7:

Solution 8.8:

Solution 8.9:

Solution 8.10:

Solution 8.11: