Norwegian University of Science
and Technology
Department of Mathematical
Sciences

MA1201 Linear Algebra and Geometry

Exercise set 09

Compulsory exercises

Hand in your solutions to these exercises. All answers must be justified.

Chapter 8.1 - Linear transformations

Exercise 1 Do exercise 3 and 4 in chapter 8.1 of Elementary Linear Algebra.

Chapter 5.1 - Eigenvalues and eigenvectors

Exercise 2 Do exercise 2 in chapter 5.1 of Elementary Linear Algebra.

Exercise 3 Do exercise 6a in chapter 5.1 of Elementary Linear Algebra.

Exercise 4 Do exercise 25 in chapter 5.1 of Elementary Linear Algebra.

Exercise 5 Do exercise 33 in chapter 5.1 of Elementary Linear Algebra.

Exercise 6 Let A be the matrix in exercise 6a in chapter 5.1, considered earlier in this exercise set. Diagonalize A, i.e. find an invertible matrix P and a diagonal matrix D such that $A = PDP^{-1}$. Verify your solution by checking that $AP = PD$.