

15/09/2013

MSc. Applications of Mathematics

Linear Algebra - Homework 7
(Due on 20/09/2013 before 3:00 p.m.)

Instructions:

- Solutions must be complete and legible in order to earn maximum points.
- You may discuss and work together if necessary but you must write your own solutions. Copied solutions (from each other or books or the internet) are easy to identify and easier to grade as they can only earn a zero.

1. Find the QR factorization of the following matrix using Householder matrices:

$$A = \begin{pmatrix} 1 & 1 \\ 1 & 2 \\ 1 & 3 \end{pmatrix}$$

2. Let u be a unit vector in \mathbb{R}^n and let H_u be the Householder matrix associated with u . Show that

$$\det(H_u) = -1.$$