

Homework 2

Linear Algebra, Dave Bayer, due February 4, 2014

Name: _____ Uni: _____

[1]	[2]	[3]	Total

If you need more than one page for a problem, clearly indicate on each page where to look next for your work.

[1] Express A as a product of elementary matrices, where

$$A = \begin{bmatrix} 1 & 7 \\ 1 & 1 \end{bmatrix}$$

[2] Find a system of equations having as solution set the following affine subspace of \mathbb{R}^4 .

$$\begin{bmatrix} w \\ x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 0 \\ 1 \end{bmatrix} + \begin{bmatrix} 0 & 3 \\ 1 & 2 \\ 2 & 1 \\ 3 & 0 \end{bmatrix} \begin{bmatrix} s \\ t \end{bmatrix}$$

[3] Find the intersection of the following two affine subspaces of \mathbb{R}^4 .

$$\begin{bmatrix} w \\ x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ 1 \\ 1 \end{bmatrix} + \begin{bmatrix} 1 & 1 \\ 2 & 0 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix}$$

$$\begin{bmatrix} w \\ x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 2 \\ 1 \\ 1 \\ 3 \end{bmatrix} + \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 1 & 0 \\ 3 & 0 \end{bmatrix} \begin{bmatrix} c \\ d \end{bmatrix}$$