

MATH 4/51001
Homework #6
Due: Wednesday, October 18

Reading:

For Mon., October 16: §3.3
For Fri., October 20: §3.4

Problems to turn in:

§3.2: 1(b,d), 6, 11, 13, 14, 17, 19, 20.

Notes:

- On computational problems such as 1, 19(c,d), and 20, you **MUST** prove, justify, or explain your answers to receive credit.
- On #14, you will need Problem II from Homework #5.
- On #20, you need to determine all matrices in $\text{GL}_2(\mathbb{R})$ that commute with the given matrix. That is, find necessary and sufficient conditions on a, b, c, d so that

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \in \text{GL}_2(\mathbb{R}) \text{ and } \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} a & b \\ c & d \end{bmatrix}.$$

Problems to be aware of:

§3.2: 4, 5, 8, **15**, **21**, 22, 24, 26.

[Problems in **bold** contain results we will assume and use in the course.]