

HOMEWORK 2
DUE WEDNESDAY, 30 JANUARY 2008

MATH 215 - LINEAR ALGEBRA - TOM LAGATTA

- Read pages 29-46, 58-65 in the textbook (Sections 1.3 and 2.1).
- **Section 1.1:** 21
- Prove Theorem 1.2, part (b).
- **Section 1.2:** 1, 3, 4*, 5, 7, 9, 10*, 11, 13, 15, 16*, 17, 18, 19, 21*, 24, 25, 27*, 32*, 42, 43, 44, 54, 57, 58, 60, 62, 63. Hints:
 - Use MATLAB for problems denoted by an asterisk *. Please be clear as to which lines of code correspond to which problems, and write your conclusions and circle your answers.
 - On all problems involving “proving,” “showing,” or “explaining” something, please respond in complete, clear sentences. Calculations should be used to elucidate your argument, not take its place.
 - For problems like 57 or 60, people often have problems with expressions involving $\| \cdot \|^2$. Remember the following definition:

$$\|\vec{a} + \vec{b}\|^2 = (\vec{a} + \vec{b}) \cdot (\vec{a} + \vec{b}),$$

then expand the expression on the right, using the distributivity of the dot product.

$$\|\vec{a} + \vec{b}\|^2 \text{ is **not** equal to } \|\vec{a}\|^2 + 2\|\vec{a}\| \|\vec{b}\| + \|\vec{b}\|^2.$$

- Think about problem 62b in the context of planes, as in section 1.3.
- The answers to odd-numbered problems are in the back of the book, and you are encouraged to check all problems using MATLAB.