

**HOMEWORK 11**  
**DUE WEDNESDAY, 16 APRIL 2008**

MATH 215 - LINEAR ALGEBRA - TOM LAGATTA

- Read pages
  - 262-273 (Section 4.2 up to Cramer's Rule)
  - 279-280 (Brief History of Determinants)
  - 45, 283-285 (Cross Product and Geometric Applications of Determinants)
  - 289-295 (Sections 4.3 and 4.4)
- The third exam will be held **Wednesday, April 30**. It will cover all material through Section 4.3 and part of Section 4.4.
- **Section 4.2:** 1, 3, 6, 7, 9, 10, 13, 15, 22, 23, 24, 26, 32, 35, 36, 37, 38, 39, 40, 41, 43, 44, 47, 48, 49, 50, 51, 52, 53, 54, 55

Do all determinants by hand, but you may check your answers using MATLAB.

- I skipped over the cross product back in chapter 1, but I want you to read up on it again, to give a geometric motivation for determinants. Recall that if  $\vec{u}, \vec{v} \in \mathbb{R}^3$ , then the cross product is a new vector  $\vec{u} \times \vec{v} \in \mathbb{R}^3$  (defined by the formula on page 45) which is orthogonal to both  $\vec{u}$  and  $\vec{v}$ .

**Page 284:** 1ac, 3abcdf

**Page 46:** Do Problem 8, then explain why this problem about triangles implies that the area  $\mathcal{A}$  of the parallelogram determined by  $\vec{u}$  and  $\vec{v}$  is given by  $\mathcal{A} = \|\vec{u} \times \vec{v}\|$ .

**Page 284:** 4, 5, 6, 7, 9, 10