

## Notes on Exam 1, Math 544, Fall 2009

1. Exam 1 covers 1.1–1.3, 1.5, 1.6, 1.7, and 1.9.
2. Be able to define “linearly independent” and “non-singular”.
3. Be able to state the Theorem about the linear dependence of  $m$  vectors in  $\mathbb{R}^n$ , when  $n < m$ . (I call this the “Short/wide Theorem”.)
4. Be able to state a few conditions that are equivalent to: “the matrix  $A$  is non-singular.”
5. The material on the old exams which is covered on your exam 1:
  - (a) Exam 1’s:
    - 97: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
    - 98: 1, 2, 3, 4, 5, 6, 7, 8, 9.
    - 01: 1, 2, 3, 4, 5, 6, 7.
    - 02: 1, 2, 3, 4, 6, 8, 10.
    - spring 03: 1, 2, 3, 5, 7, 8, 9, 10.
    - summer 03: 1, 2, 3, 4, 5, 6, 7, 8, 9.
    - 04: 1, 2, 3, 4, 5.
    - summer 05: all
    - fall 05: all
    - summer 06: 1, 2, 3, 4, 5, 6, 7.
    - fall 06: all
    - summer 07: all.
  - (b) Exam 2’s:
    - 97: 1, 2.
    - 98: 1, 2, 4, 5, 6, 9, 10.
    - 01: 2, 7, 8, 9, 10.
    - 02: 1, 7.
    - spring 03: 1, 2, 3, 4a, 4b, 4c, 6.
    - summer 03: 1, 2, 3, 4, 5, 6, 7, 8, 9.
    - 04: 1, 2, 3, 4, 5, 6, 7, 8.
    - summer 05: 1, 2, 4, 5, 6, 7.
    - fall 05: 1, 7, 8.

summer 06: 9.  
fall 06: 2, 8.  
summer 07: 4, 5, 6, 7, 8.

(c) Exam 3's:

98: 1, 6, 7.  
01: 3, 4, 5, 10.  
02: 6.  
summer 03: 1.

(d) Final Exams:

97: 9 (The matrices  $A$  and  $b$  are given before problem 6.), 14, 15, 16.  
98: 4, 5, 6.  
01: 4, 9b, 9e, 10e, 10f.  
02: 3, 8 (Solve  $Ax = b$  and then stop.), 15.  
spring 03: 10, 11, 16, 17, 19.  
summer 03: 11, 16, 17abc.  
04: 1ab, 4.  
summer 05: 1ab.  
fall 05: 1ab, 6, 16.  
summer 06: 2, 3abc.  
fall 06: 1, 6a.  
summer 07: 2.