Notes

- Midterm will be held in class 0900-1100, 020425 (Thr). You can bring along a calculator and a cheatsheat of size A4 with you. I will explain this part in class. **Be Prepared!**.
- This midterm will cover (refer to **Content** of the Text): Ch 1 (except §1.5) , §2.1, §2.2. §3.2 (skip Example 3{8, Example 12), §3.3 (skip *Vector Space of Functions*, p151-154).

1. Let A be a mxn matrix. Null space $N(A)$ and Span (space). $S(\mathbf{v_1}, \cdots, \mathbf{v_n})$ where $\mathbf{v_1}, \cdots, \mathbf{v_n}$ are vectors in $V = R^m$.
2. Spanning set of V
3. Coordinate system of R^n. (Sets of vectors are) Linear independent and linearly dependent. Their connection with consistency of a linear system (Theorem)

Homework

1. Do the Chapter test in the end of each chapter. They are very helpful.
2. §3.3: 2, 5, (contrasted with §3.2:12), 14, 16. Due 020425 in class before midterm.

Reminder

Determinant

You can calculate the determinant of a square matrix A by these rules

- If A is an elementary matrix of interchanging two roles (Type I, cf. p 68 rn Text) then $\det(A) = -1$
- If A is an upper triangular matrix with diagonal entries $a_1, \cdots, a_n$ then $\det(A) = a_1 \cdots a_n$ (product of them).
- $\det(A) = \det(A^t)$; $\det(AB) = \det(A)\det(B)$.

Consequently (you should be able to check them yourself),

- If A is an elementary matrix of Type II (multiplying a nonzero constant c, p 69), then $\det(A) = c$
- If A is an elementary matrix of Type III (adding a multiple of one row to another, p 69), then $\det(A) = 1$.

Nonsingularity of A and consistency of $Ax = b$

Theorem 1.3.1 (p 42). Theorem 1.4.3 (p 71), Corollary 1.4.4 (p 72), Theorem 2.2.2 (p 110). Connection with linearly independency of column vectors of A. Theorem 3.3.1, Theorem 3.3.2.

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