

Math 2210Q-004 Applied Linear Algebra  
E-Mail Assignments  
on the readings in the textbook

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Submit by E-Mail by 7:00 am on the date due (before class)  
to [dgross@math.uconn.edu](mailto:dgross@math.uconn.edu).

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Due for Thursday, March 19

**Section 4.1** Vector Spaces and Subspaces

**Section 4.2** Null Spaces, Column Spaces, and Linear Transformations

**To read:** Reread section 4.1; Read section 4.2

**To Do:** Most of the Homework from 4.1 can be finished.

**Be sure sure to understand:** The definition of a vector space; Examples 3, 4 and 8; The definition of a subspace; The statement of Theorem 1; The section “The Contrast Between  $\text{Nul}A$  and  $\text{Col}A$ ”.

**Email Subject Line:** 2210EA 03/19 YourLastName

**Questions:**

1. Is  $\text{Span}\{x, x^2\}$  a subspace of  $\mathbb{P}_2$ , the set of all polynomials of degree at most 2? Can you describe this subspace more simply in everyday language (well at least in everyday language for a high school algebra 2 student)?
  2. Give an example of:
    - (a) a subspace of  $\mathbb{P}_3$ , different from  $\mathbb{P}_3$  and different from  $\{0\}$ , and
    - (b) a subset of  $\mathbb{P}_3$  which is not a subspace of  $\mathbb{P}_3$ .
  3. If  $A$  is an  $m \times n$  matrix, then of the following vector spaces, which are subspaces of  $\mathbb{R}^n$  – the null space of  $A$  and/or the column space of  $A$ ?
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