Math 4326 | **LINEAR ALGEBRA** | Spring 2017
Dr. Duval | **Homework**

Tuesday, February 14

Follow the separate general guidelines for Parts A,B,C. Be sure to include and label *all four* standard parts (a), (b), (c), (d) of Part A in what you hand in.

Matrices (part I): Representation, Addition, Scalar Multiplication

Section 3.C, pp. 70–74

A: Reading questions. Due by 2pm, Mon., 20 Feb.

1. Example 3.33 shows how to construct the matrix for a linear transformation, where the resulting matrix is 3-by-2. Make up your own example corresponding to a 2-by-4 matrix, with no 0 entries, and all entries being different. Now explain your example just as carefully as the textbook explains its example. You may use the textbook's example as a template for your own.
2. Verify result 3.36.
3. In the proof of result 3.40, the text claims that $\mathbf{F}^{m,n}$ is a vector space, and asks you to verify this. Though you may want to check all the properties of a vector space (see Definition 1.19) for yourself, please just turn in a verification of the **first** distributive property in Definition 1.19.

B: Warmup exercises. For you to present in class. Due by end of class Tue., 21 Feb.

Exercises 3.C: 2

Matrices (part II): Matrix Multiplication

Section 3.C, pp. 74–78

A: Reading questions. Due by 2pm, Wed., 22 Feb.

1. In the long string of equalities in the middle of p. 74, what are u_k, v_r, and w_j?
2. Why is matrix multiplication defined the way it is? What equation are we trying to make hold by defining it this way? [Hint: The answer is stated very explicitly and precisely in the text, in a single sentence.]
3. Why does Notation 3.44 make sense? (Unless you think it doesn't make sense, in which case you should explain why you think that.)
4. Verify result 3.49.

B: Warmup exercises. For you to present in class. Due by the end of class Thu., 23 Feb.

Exercises 3.C: 9, 12