Last name _____

First name _____

LARSON—MATH 310–CLASSROOM WORKSHEET 01
Vector Spaces.

1. What are the real numbers $\mathbb{R}$?

2. What is a *field*?

3. What are the *complex numbers*?

4. Why do non-zero complex numbers have a multiplicative inverse?

5. Why are the complex numbers a field?

6. What is $\mathbb{R}^2$?

7. How can we interpret the *vectors* in $\mathbb{R}^2$ geometrically?

8. Explain addition in $\mathbb{R}^2$ algebraically, and then geometrically.

9. Explain scalar multiplication in $\mathbb{R}^2$ algebraically, and then geometrically.

10. What is a *linear space* (or *vector space*) over a field $\mathbb{K}$?

11. Argue that $\mathbb{R}^2$ is a vector space.

12. What is $\mathbb{K}^n$?

13. Argue that $\mathbb{K}^n$ is a vector space.