

Reading Assignment 1

One of the most helpful things in doing your homework is reading the section or your class notes first. It will take you considerably less time to do the homework if you first read the section and you will be more successful with the problems also. The purpose of this assignment is to help you in the reading of the book. Many students experiencing problems with proofs say: "I don't know where to start." One starts by reading the book or notes.

All the questions in this sheet are taken directly from the reading assignment.

Read Sect. 1.1 and 1.2

1. How is a vector defined in Sect. 1.1? What are physical examples of vectors?
2. True/False: If x and y are two vectors, the sum of the magnitude of vector x and the magnitude of vector y is equal to the magnitude of vector $x + y$.
Give the example given in the book that supports or refutes this statement. Can you think of another similar example?
3. Explain the law for adding vectors presented in Sect.1.1 and give a numerical example.
4. Give examples in \mathbb{R}^3 to illustrate the 8 properties in Section 1.1.
5. Define parallel and give an example in \mathbb{R}^3 .
6. Give the vector equations for a line and a plane discussed in Sect. 1.1, make sure that you tell the reader whether the letters are points, vectors or scalars.
7. How is a vector defined in Sect. 1.2? What is the difference? How can you reconcile both definitions?
8. How is the zero polynomial defined? What does it mean for two polynomials to be equal?

9. Look at example 3 in Section 1.2? Suppose that you take the set $P_2(F)$ of polynomials of degree 2 and less, is this a vector space?
10. What does the cancellation law of vector addition says? What are its consequences?

Practice Problems

The following are practice problems, they will not be graded so do not hand them in. Some of the problems in the in-class part of your exams will be taken directly from these problems and some others might be variations. I advise you that at the very least you read them to make sure that you can do them, they are in most part computational. Some answers are in the back of your book.

Sect. 1.2 # 1 (justify your answer), 3, 4, 7, 10