# Reading Assignment # 1

Math 13 - Prof. Orellana

January 3, 2006

Read Sections 1.1-1.6, this should be a review. If you complete these problems you will receive 2 extra credit points (incomplete assignments count 0). This might make a difference in border line cases, that is, if you are borderline between grades at the end of the term. I truly believe that they will help you in understanding if you actually do read your book. Since this is a "reading assignment in all your answers indicate the page where you found the answers.

1. What is the objective of Section 1.1?
2. What are the properties that vector addition satisfy? Give examples to show that these properties are true.
3. What are the properties of scalar multiplication? What does the remark after the properties says?
4. What is the displacement vector from a point to another point. In the book they give the formula for a displacement vector in $\mathbb{R}^3$, what is it in $\mathbb{R}^4$?
5. What law is used to visualize the sum of two vectors?
6. Read the paragraph at the end of page 5 and summarize what it says. Why are vectors ideal for the study of 2D and 3D dynamical problems?
7. What are the standard basis vectors? Why are these vectors special?
8. What are the advantages of using parametric equations to represent curves?
9. What is the parametric equation of a line? Are parametric equations unique? In page 12 they explain how to check that two parametrizations of a line are the same, how can you check?
10. What is the dot product of two vectors? What are the properties?

11. What three geometric concepts can be defined in terms of the dot product?

12. What types of questions does vector projections allow us to answer?

13. State and give examples of properties of the cross product. Show with an example that the cross product is not associative?

14. Write the cross product of two vectors using determinants. Give a geometric interpretation of the cross product.

15. How do we compute the equation of a plane if we are given three points on the plane?

16. Explain how to obtain the parametric equation of a plane in $\mathbb{R}^3$ determed by two vectors and going through (0,0,0).