

UH - Math 6303 - Dr. Heier - Spring 2016

HW 1

Due 02/17, at the beginning of class.

Use regular sheets of paper, stapled together.

Don't forget to write your name on page 1.

1. (1 point) Section 9.1, Problem 13
2. (2 points) Section 9.4, Problem 3
3. (1 point) Prove carefully that the coordinate axes form an algebraic set in \mathbb{R}^3 .
4. (2 points) Explain why $x^5 + 3x^2 + 6 \in \mathbb{Q}[x]$ is irreducible based on Eisenstein's criterion. Find the multiplicative inverse of the class of $1 - x - x^3$ in $\mathbb{Q}[x]/(x^5 + 3x^2 + 6)$ as discussed in class.
5. (1 point) Section 13.1, Problem 2
6. (1 points) Section 13.1, Problem 5
7. (2 points) Section 13.1, Problem 6