Algebraic Geometry.

Alec Zabel-Mena

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Chapter 1

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Bibliography

- [1] D. Dummit, Abstract algebra. Hoboken, NJ: John Wiley & Sons, Inc, 2004.
- [2] I. N. Herstein, Topics in algebra. New York: Wiley, 1975.
- [3] M. Atiyah and I. MacDonald, *Introduction to Commutative Algebra*. Addison-Wesly Series in Mathematics, CRC Press.
- [4] D. Eisenbud, Commutative Algebra: Wit a View Toward Algebraic Geometry. Graduate Texts in Mathematics, Springer Verlag.
- [5] R. Hartshorne, Algebraic Geometry. Graduate Texts in Mathematics, Springer Verlag.
- [6] W. Fulton, Algebraic Curves: An Introduction to Algebraic Geometry. Advanced Book Classics, Addison-Wesley.