

Chapter 1

Statistics

1 Introduction

The following are references.

- E Artin, Galois theory, 1994
- A Grothendieck and M Raynaud, Revêtements étales et groupe fondamental, 2002
- I N Herstein, Topics in algebra, 1975
- M Reid, Galois theory, 2014

Notation. If K is a field, or a ring, I denote the **ring of polynomials** with coefficients in K .

Lecture 1
Thursday
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2 Central tendency and dispersion

- 2.1 Mean, variance and moments**
- 2.2 Parameter estimation**
- 2.3 Other measures of central tendency**
- 2.4 Sampling from normal RVs**

3 Hypothesis testing

- 3.1 Introduction**
- 3.2 Single sample hypothesis testing**
- 3.3 Distribution of p-values**
- 3.4 Errors**
- 3.5 Two sample hypothesis testing**
- 3.6 Multiple hypothesis testing**

4 Covariance and Correlations

- 4.1 Covariance**
- 4.2 Correlation**

5 Statistical models

- 5.1 Definitions**
- 5.2 Likelihood**
- 5.3 Linear regression**

6 Bayesian inference

- 6.1 Definitions**
- 6.2 Conjugate pair distributions**
- 6.3 Intractable posteriors**
- 6.4 Choosing a prior**

7 Bootstrap

- 7.1 Empirical distribution**
- 7.2 Bootstrap procedure**