

# Math 362: Mathematical Statistics II

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# Chapter 6. Hypothesis Testing

## § 6.1 Introduction

## § 6.2 The Decision Rule

## § 6.3 Testing Binomial Data – $H_0 : p = p_0$

## § 6.4 Type I and Type II Errors

## § 6.5 A Notion of Optimality: The Generalized Likelihood Ratio

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Instead of numerical estimates of parameters, in the form of either single points or confidence intervals, we want to make a choice between two conflicting theories, or **hypothesis**:

1.  $H_0$ : the null hypothesis  
v.s.
2.  $H_1$ : the alternative hypothesis

Comments: Hypothesis testing and confidence intervals are dual concepts to each other:

- ▶ One can be obtained from the other.
- ▶ However, it is often difficult to specify  $\mu_0$  to the null hypothesis.