Hypothesis testing I

What is a hypothesis? What is H_0? What is H_1 ($= H_A$)?

Understand how to write out your hypotheses, both in words and in symbols.

Make sure you know what you are testing:

Why do we test μ and not $\bar{y}$? You should know this!

What is a one sample t-test?

Why is this similar to constructing a *CI*?

You should know that a t-test and a *CI* can give you the same result (why? how?).

How do you calculate t^* ($= t_s$)?

Know how to use the t-tables.

In particular, know how to look up t_{table} for the correct value of α and v ($= d.f.$)

Know when we reject or when we "fail to reject" our H_0.

What comparison do we make?

(See also below under p-values).

What is the definition for α? for β?

How do these relate to type I and type II errors (be able to define these errors)?

What is the relationship between a type I and type II error?

What happens, for instance, if you try to minimize a type I error?

How do you decide on α?

(You examine the "cost" of making a mistake - you do NOT need to do this on the exam, but you should know how you might decide on α in the real world).

When should you decide on α?

What are p-values?

Make absolutely sure you know this!

How do p-values relate to α?

How do you calculate p-values?

Why can't we usually do this without software?

How can you get approximate p-values using tables?

What is a sign test (you do NOT need to know how to do this)?

Why is comparing the p-value to α the same as comparing $|t^*|$ to t_{table}?

Why are smaller p-values "better"?

Why do you never accept the H_0?

What is the power of a test, and why is this important?

Make absolutely sure you know all steps in a hypothesis test, and the correct order of these steps.