Use the High School and Beyond (hsb) data for this problem. This data set is on the course web-site including a description of the variables and their coding.

Assuming that a sasdata set names ‘hsb’ exists, in IML one way to read the data for boys and girls into separate matrices is as following

```plaintext
proc iml;
use sasdata.hsb;
read all var{ RDG WRTG MATH SCI CIV} where(SEX=1) into Xbt;
read all var{ RDG WRTG MATH SCI CIV} where(SEX=2) into Xgt;
```

1. Test the significance of the difference between boys’ mean and the girls’ mean on the five cognitive variables (i.e., reading, writing, math, science, and civics). Use $\alpha = .01$.

2. Perform univariate $t$-tests (i.e., construct confidence intervals) on each of the 5 variables. ($\alpha = .01$)

3. Construct simultaneous $T^2$ intervals for each of the 5 variables ($\alpha = .01$).

4. Compute the “discriminate function”.

5. Using the results from parts (a)–(d), what do you conclude (i.e., give interpretation).