

**ECON 257**  
**EXERCISES 5**

**Classical linear model:  $R^2$**   
**Review questions**

1. In the context of the classical linear regression model (with an intercept),
  - (a) define  $R^2$  and  $\bar{R}^2$ ;
  - (b) show that  $\bar{R}^2 \leq R^2 \leq 1$  ;
  - (c) give conditions under which  $\bar{R}^2 = R^2$  .
2. In the context of the classical linear regression model,
  - (a) can  $R^2$  be negative ? If so, when?
  - (b) can  $\bar{R}^2$  be negative ? If so, when?
3. Can you relate  $R^2$  to a test of significance ? If so, explain what this test can be.