UNIVERSITY OF NORTH CAROLINA
Department of Economics

Economics 275 — Dr. Gallant
Homework 4 — Fall 2000
Due November 1, 2000

For the Berndt-Wood factor demand system with symmetry imposed

$$y = f(x, \theta) + e$$

$$y = (M_K, M_L, M_E)'$$

$$x = (\ln P_K, \ln P_L, \ln P_E, \ln P_M)'$$

$$\theta = (\theta_1, \theta_2, \cdots, \theta_{12})'$$

$$f(x, \theta) = \begin{pmatrix} \theta_1 + \theta_2 x_1 + \theta_3 x_2 + \theta_4 x_3 + \theta_5 x_4 \\ \theta_6 + \theta_3 x_1 + \theta_7 x_2 + \theta_8 x_3 + \theta_9 x_4 \\ \theta_{10} + \theta_4 x_1 + \theta_8 x_2 + \theta_{11} x_3 + \theta_{12} x_4 \end{pmatrix}$$

use the data in file klem.dat and documented in file klem.doc which are available either by anonymous ftp from ftp.econ.duke.edu in directory pub/arg/data or by clicking "Browse ftp site" on the course web page, to test the hypothesis of homogeneity

$$\theta_2 + \theta_3 + \theta_4 + \theta_5 = 0$$

$$\theta_3 + \theta_7 + \theta_8 + \theta_9 = 0$$

$$\theta_4 + \theta_8 + \theta_{11} + \theta_{12} = 0$$

using as a test statistic either the Wald, likelihood ratio, or Lagrange multiplier test. Which of these tests will give the same result.