Assignment 3

a.) From $Y = \gamma[\delta K^{-\rho} + (1-\delta)L^{-\rho}]^{-\frac{V}{\rho}} + \varepsilon$ with initial value $\gamma = 4, \delta = 0, \rho = 1, V = 1$

estimated parameters are $\gamma = 2.89 \times 10^{-17}$, $\delta = 0.802$, $\rho = -1.863$, $V = 3.391$, $\beta = \frac{1}{1-\rho} = 0.347$

F-test H_0; $\delta = 0, V = 0, \rho = 0$

H_1; otherwise

p-value $= 0 < \alpha = 0.05$

H_0 is rejected

b.) From $\ln Y = \ln \gamma - \frac{V}{\rho} \ln[\delta K^{-\rho} + (1-\delta)L^{-\rho}] + \varepsilon$ with initial value

$\ln \gamma = 4$, $\delta = 0$, $\rho = -1$, $V = 1$ estimated parameters are $\gamma = 99.648$, $\delta = 0.275$, $\rho = -0.808$, $V = 0.922$, $\beta = 0.553$

F-test H_0; $\delta = 0, V = 0, \rho = 0$

H_1; otherwise

p-value $= 0 < \alpha = 0.05$

H_0 is rejected

c.) If we change the initial value the estimated result would changed. To get an accurate solution initial value should follow the theory and assumption. In this case efficiency parameter change from 4 to 55 the estimated result would be change to 55 And from the model in a.) if Y, K, L is not change and efficiency is increase $-\frac{V}{\rho}$ would be lower from $\frac{3.39}{1.86} \rightarrow \frac{1.69}{28.65}$ to balance the equation

d.) If we change the $\hat{\theta}_t : \hat{\theta}_{t-1} - \Delta t$ convergence will impact the estimated parameter higher convergence, higher error as in (i) rss is higher for (ii) convergence is lower so lower error and require more iteration time but in this case we limit at 100 which less than a.) that have 355 iteration So, it is possible the iteration process could not meet the convergence value.

e.) If we change the initial value the estimated result would change but in this case the estimates parameters don't change significantly. This occurring because the closest solution for both initial value is the same point

f.) In this case the change in convergence value doesn't change the parameters significantly. Which occur because the initial value are quite close to the solution that we can see from iteration process

g.) For the sign, meaning, and overall test of both models are indifferent, except the individual test of β in model (1) that it is insignificant. Eventhough model ② have lower R^2 but the insignificant is much more severe so model ② is more appropriated.