An Increase in Interest Rates in the q Model. Consider a perfectly competitive industry with costs of adjustment to capital that was in equilibrium with interest rate $\underline{r}$ leading up to period t, at which date the interest rate increases permanently to $\bar{r} > \underline{r}$.

1. Draw a diagram that shows how the $\Delta\lambda_{t+1} = 0$, $\Delta k_{t+1} = 0$ loci and the saddle path change in response to the increase in the interest rate. Is the new equilibrium level of the capital stock $\check{k}_{\text{post}}$ higher or lower than before? Why?

2. Draw diagrams showing the time paths of share prices, investment, and the capital stock following the increase in the interest rate. Explain the time pattern of share prices over time; in particular, explain the relationship between any depicted movements in share prices, and the proposition that stock prices follow a random walk.

3. Suppose that, in response to the increase in interest rates, the government wanted to pursue a tax policy that would prevent any changes in the level of the capital stock. Describe the two options the government has, and explain how the two policies would differ or be similar with respect to their implications for dynamics of q and λ.