Economics 614: Macroeconomics
Spring, 2010
Cornell University
Problem Set #4
Due: Friday, February 26, 2010

$$Y = 6C + 7Z = 25K^{1/5}L^{4/5}$$
$$\dot{K} = Z - \tfrac{K}{5}$$
$$\tfrac{\dot{L}}{L} = 0.01$$

The problem is to maximize the $\int_0^T c(t)e^{-\delta t}dt$
s.t. the above production function and $k(0) = k_0$ *and* $k(T) \geq k_T$

a. $k_0 = 1, k_T = 1.5, \delta = 0.19, T = 10$. Calculate (k^*, q^*) and $\tilde{k}$. Plot the optimal trajectory $\{k(t)\text{: } 0 \leq t \leq T\}$ (you can approximate the time on the turnpike if necessary)

b. $k_0 = 1, k_T = 3, \delta = 0.19, T = 10$. Do the same exercises as in part a.

c. $k_0 = 1, k_T = 3, \delta = -0.01, T = 10$. Do the same exercises as in part a.