

-  
-  
**14.06 Problem Set 1 2004 - Solow Model**  
-

Prof: Marios Angeletos  
-

-  
**Question 1:** (The Solow Model in discrete time with technological progress.)

Consider the Solow model that was presented in class but now allow for labor augmenting technological progress so that:

$$Y_t = K_t^\alpha (A_t L_t)^{1-\alpha}$$

where labor and technological progress grow each period according to

$$L_t = (1 + n) L_{t-1}$$

$$A_t = (1 + g) A_{t-1}$$

where  $L_0$  and  $A_0$  are taken as given.

As before, the evolution of capital is governed by

$$K_t = (1 - \delta) K_{t-1} + I_t.$$

To complete the model, make Solow's assumption that a constant fraction  $s$  of output is invested.

Chose an appropriate normalization and fully characterize the steady state of the economy. What is the growth rate of output per worker in the steady state?

-  
**Question 2:** Romer 1.4.

-  
**Question 3:** Romer 1.6.

-  
**Question 4:** Romer 1.9.