1) [40 points] Construct a model of college students dating each other. Your model should explain why a) college relationships have short durations and b) why they sometimes turn into marriage. Hint: it is not enough just to regurgitate the cohabitation model we discussed in class. I want you to think about how the model should be changed to handle the important characteristics of college dating.

2) [20 points] In data, we observe that cohabitations last shorter than marriages. Provide two separate reasons why this might be so. Use a model to make your point.

3) [40 points] Consider the following model of care provision for an elderly parent: The parent’s utility function is $U_p(x_p, h)$ where $x$ is the amount of bananas she eats and $h$ is the amount of “help” she gets from her daughter with $\partial U_p / \partial x_p > 0$, $\partial U_p / \partial h > 0$. The daughter’s utility function is $U_d(x_d, h, l, u_p)$ where $x_d$ is the amount of bananas she eats, $h$ is the amount of “help” she provides her mom, $l$ is the amount of leisure she has, and $u_p$ is the utility of her mom, $\partial U_d / \partial x_d > 0$, $\partial U_d / \partial h \leq 0$, $\partial U_d / \partial l > 0$, and $\partial U_d / \partial u_p \geq 0$. The mom’s budget constraint is

$$y_p + t \geq p_x x_p$$

where $y_p$ is the nonlabor income of the mom and $t$ is a transfer from the daughter to mom, and the daughter’s budget constraint is

$$y_d + w_d (1 - h - l) - t \geq p_x x_d$$

where $y_d$ is the nonlabor income of the daughter and $w_d$ is the daughter’s wage. Hint: You must specify a rule for determining $t$.

a) Write down the first order conditions for the mom and for the daughter.

b) Show how the daughter’s behavior changes as the mom gains income $y_p$.

c) Show how the daughter’s behavior changes as the mom becomes less healthy.