# Week 3 - Problems

UCLA - Econ 102 - Fall 2018

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Consider the model of lecture 3 again. Instead of logarithmic preferences, assume that preferences are given by:

$$u(c) = \frac{c^{1-\sigma} - 1}{1 - \sigma},$$

1. Under what condition on $\sigma$ is this an increasing and concave utility function?
2. Show using 4 different ways that:
$$\frac{\beta u'(c_1)}{u'(c_0)} = \frac{1}{1+R}$$
3. Using the equation in question 1, what is the ratio $c_1/c_0$?
4. Replace in the intertemporal budget constraint to find an implicit equation for $c_1$. Do the same for $c_0$.
5. Assume that $\sigma = 1/2$, and $f_0 = 0$, $y_0 = \$90000$, $y_1 = 0$, $\beta = 1$. What are $c_0$ and $c_1$ if $R = 1\%$? What about if $R = 2\%$? How much does $c_0$ change then? How much in percentage terms?
6. Same questions if $\sigma = 1$.
7. Same questions if $\sigma = 2$.
8. Compare the changes in $c_0$ following an increase in the real interest rates in questions 5, 6, 7. Comment.