Find optimal consumption for a consumer who has the utility function

$$w_1\left(\frac{c_1^{1-\gamma_1}}{1-\gamma_1}\right)+w_2\left(\frac{c_2^{1-\gamma_2}}{1-\gamma_2}\right)+w_3\left(\frac{c_3^{1-\gamma_3}}{1-\gamma_3}\right)$$

and who faces the budget constraint

$$p_1c_1+p_2c_2+p_3c_3=I.$$

Assume $I=10$ and

$$\begin{array}{lll} w_1=1 & \gamma_1=2 & p_1=1 \\ w_2=2 & \gamma_2=10 & p_2=2 \\ w_3=3 & \gamma_3=20 & p_3=6. \end{array}$$

You can use any method you want to find the optimal values of $c_1, c_2$, and $c_3$; but your program must be written in Julia. In addition, to receive full credit, you must check your answer using an alternative method. The alternative method must also be written in Julia. Your programs can, but do not have to, use methods discussed in class.

In order to receive full credit, it is necessary that you submit your Julia programs (as plain text files) on Blackboard, and both of your programs must print out the correct answer. Please submit all files necessary to reproduce your results.

All homework assignments should be submitted to Blackboard on time.

There is a 20 minute grace period. Homeworks that are turned in less than 20 minutes after they are due are considered late but will be graded (without penalty), if Blackboard indicates they were received within 20 minutes of the time they are due. Note that the time that matters is the time Blackboard acknowledges receiving the homework, not the time you submit it.

Homeworks more than 20 minutes late will be graded with a 10% per-minute penalty. So, for example, homeworks received 21 minutes late are penalized by 10%, homeworks received 22 minutes late are penalized 20%, etc. Homeworks received more than 29 minutes late automatically received a zero.