Problem Set #1

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Produced in Collaboration with []

1. The dynamic programming problem is:

$$\max_{\{K_{t+1},C_t\}_{t=1}^{\infty}} \mathbb{E}\left[\sum_{t=1}^{\infty}\beta^t \log\left(C_t\right)\right] \text{ s.t. } C_t + K_{t+1} - (1-\delta)K_t \leq (1+r_t)K_t \ \forall t = 1,2,3,...$$

Which can be represented by the following Bellman equation:

$$V(K) = \max_{K'} \ \{\log\left((1+r-\delta)K - K'\right) + \beta\mathbb{E}\left[V(K')\right]\}$$

2.

3.