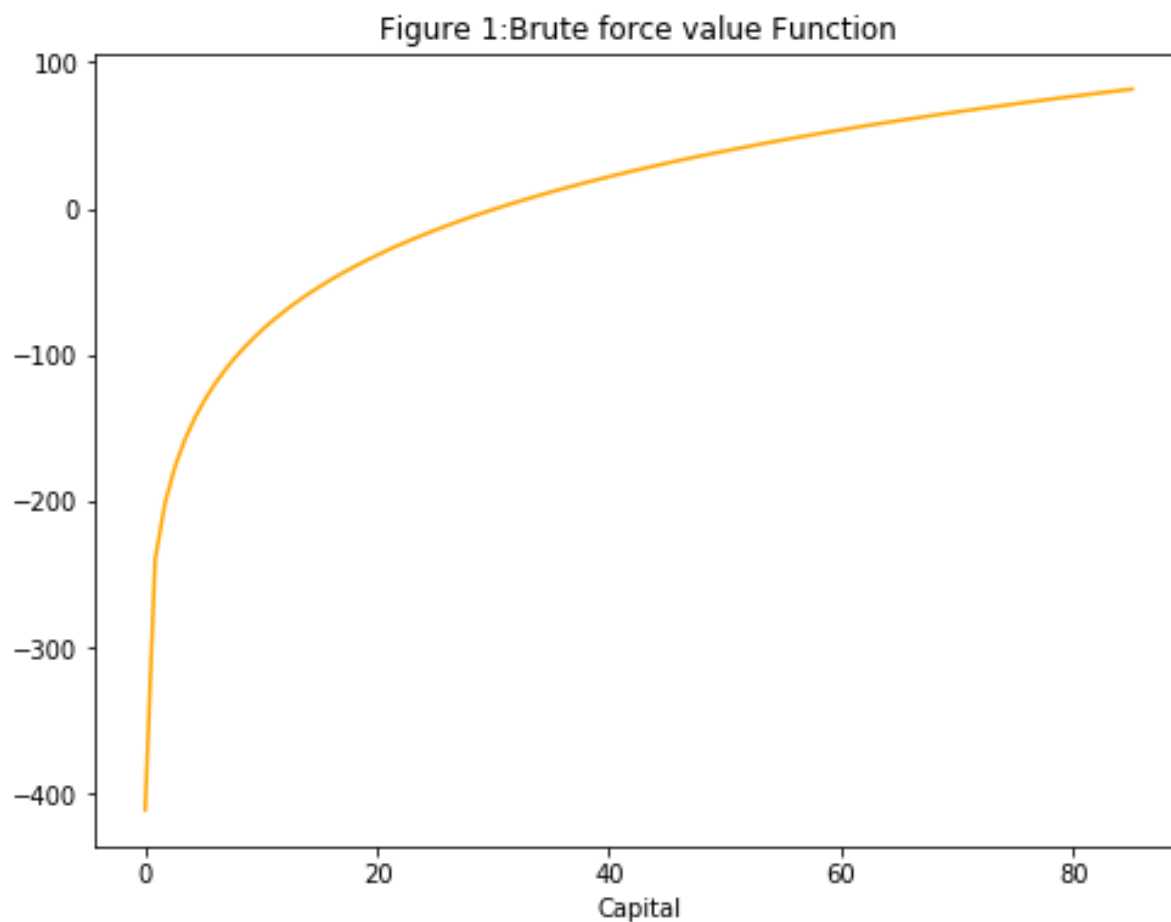Macroeconomics Homework 4
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Question 1.1

All the value functions were evaluated with an initial v=0.

 Brute force Value function graph:

Figure 1:Brute force value Function

Part	Value function conditions	Time	Time Improvements
a	Brute force	7.592	
b	Monotonicity	9.387	Including monotonicity increases the time of iteration.
c	Concavity	4.899	Including concavity the value iteration has a strong improvement.
d	Local Search	4.140	Local search also shows a massive improvement from both brute force and monotonicity. Compared to concavity there is only a slight improvement.
e	Monotonicity and Concavity	3.64	Including both monotonicity and concavity improves the time drastically compared to all the other conditions.

Part	Value function conditions	Iterations
a	Brute force	28668
b	Monotonicity	40000
c	Concavity	40000
d	Local Search	40000
e	Monotonicity and Concavity	39999