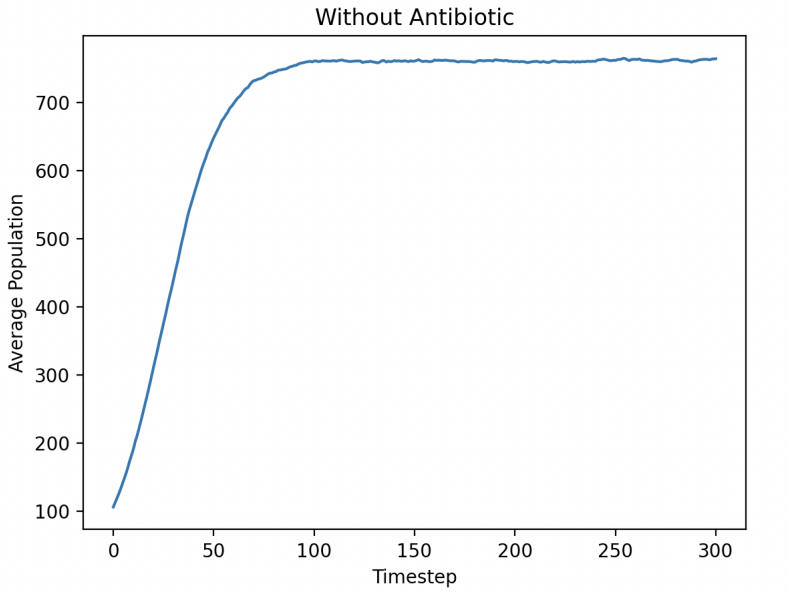
6.0002 Assignment 5

Pureumae Lee

April 25, 2024

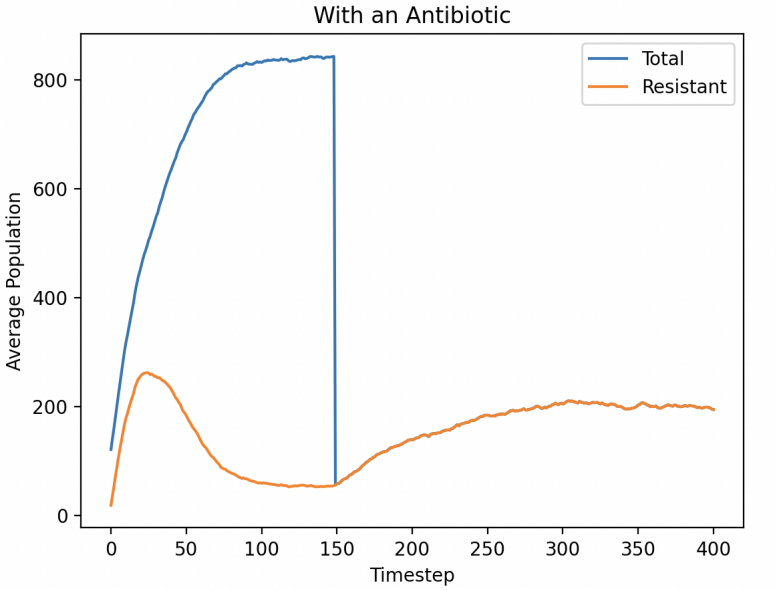
Problem 2



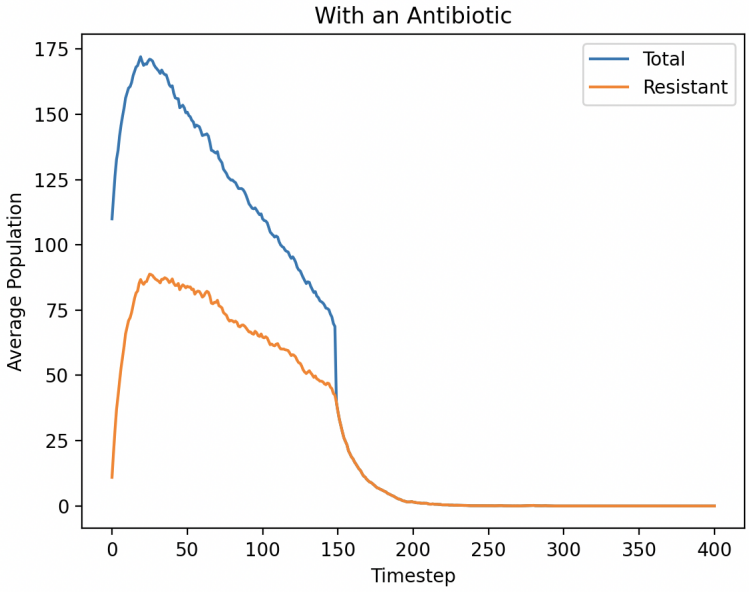
Problem 3

95% confidence interval for the population estimate at time step 299: (763.22, 4.4236257765774)

Problem 5



95% confidence interval for the population estimate at time step 299: (199.76, 10.075781819630672)
95% confidence interval for resistant population estimate at time step 299: (199.76, 10.075781819630672)



95% confidence interval for the population estimate at time step 299: (0.0, 0.0)
95% confidence interval for resistant population estimate at time step 299: (0.0, 0.0)

Problem 6

Trends of Simulation A and Simulation B

1. What happens to the total population before introducing the antibiotic?
Simulation A: It tends to grow until around 800.
Simulation B: Its population grew until around 175 and began to decline.

2. What happens to the resistant bacteria population before introducing the antibiotic?
Simulation A: It grew over 200 and began to decline until around 100.

Simulation B: It goes as the total population's graph.

3. What happens to the total population after introducing the antibiotic?
Simulation A: It merged with resistant group. There no left any non-resistant bacteria.
Simulation B: Same as simulation A.

4. What happens to the resistant bacteria population after introducing the antibiotic?
Simulation A: It grew until around 200 and remains.
Simulation B: It drastically reduced by 0.