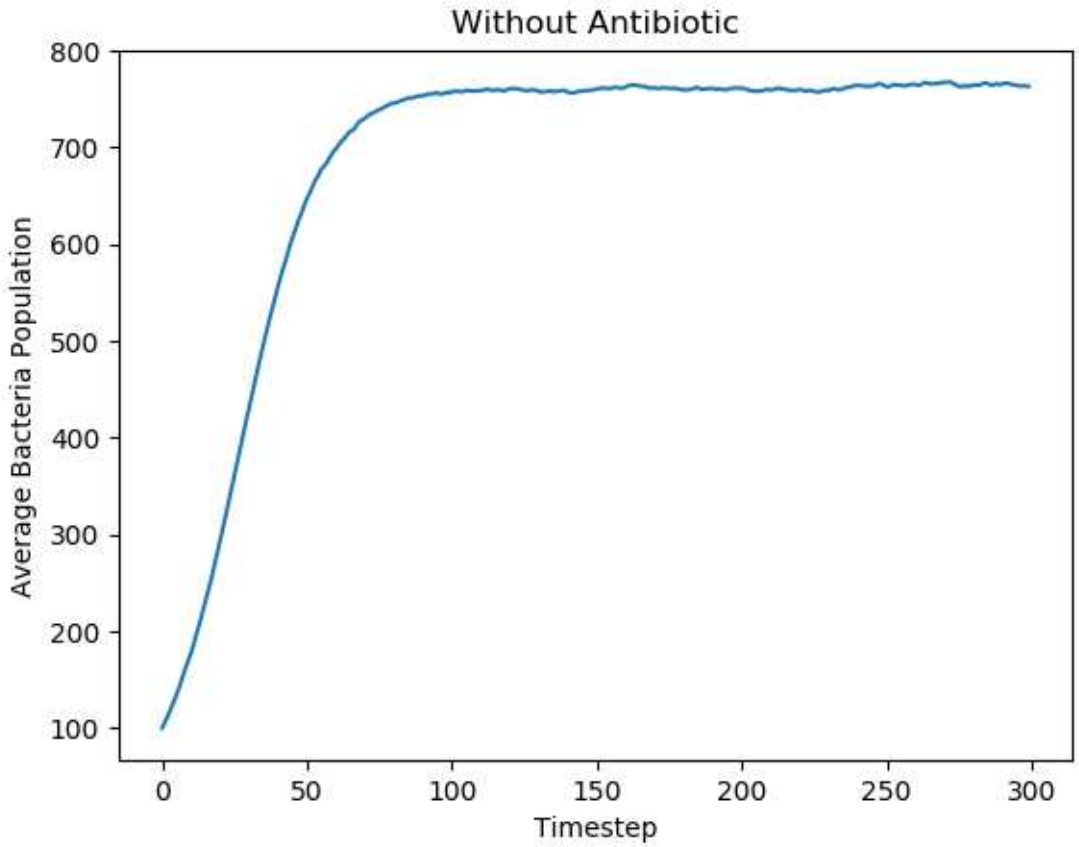
Ethan Fulbright

6.0002 – Problem Set 4

Problem 2:

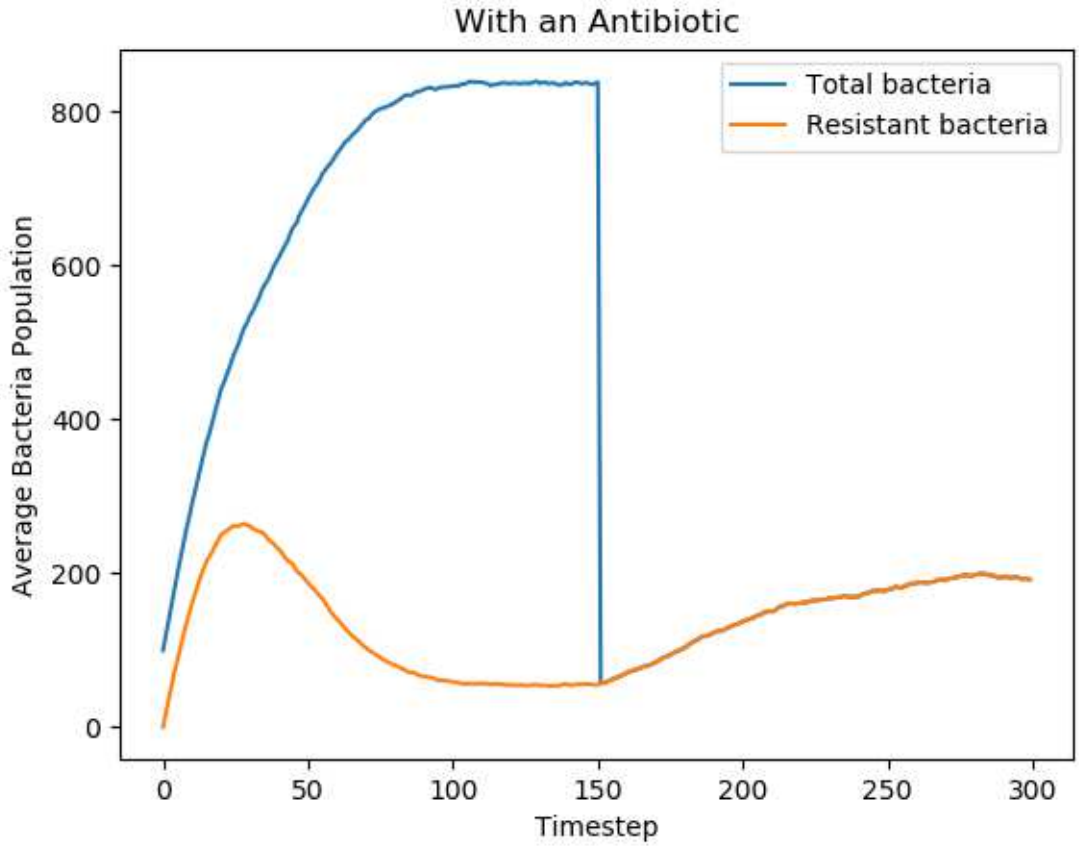


Problem 3:

The bacteria population at time step 299 is 768.58 ± 4.96, with a 95% confidence interval.

Problem 5:

Simulation A (higher birth probability):

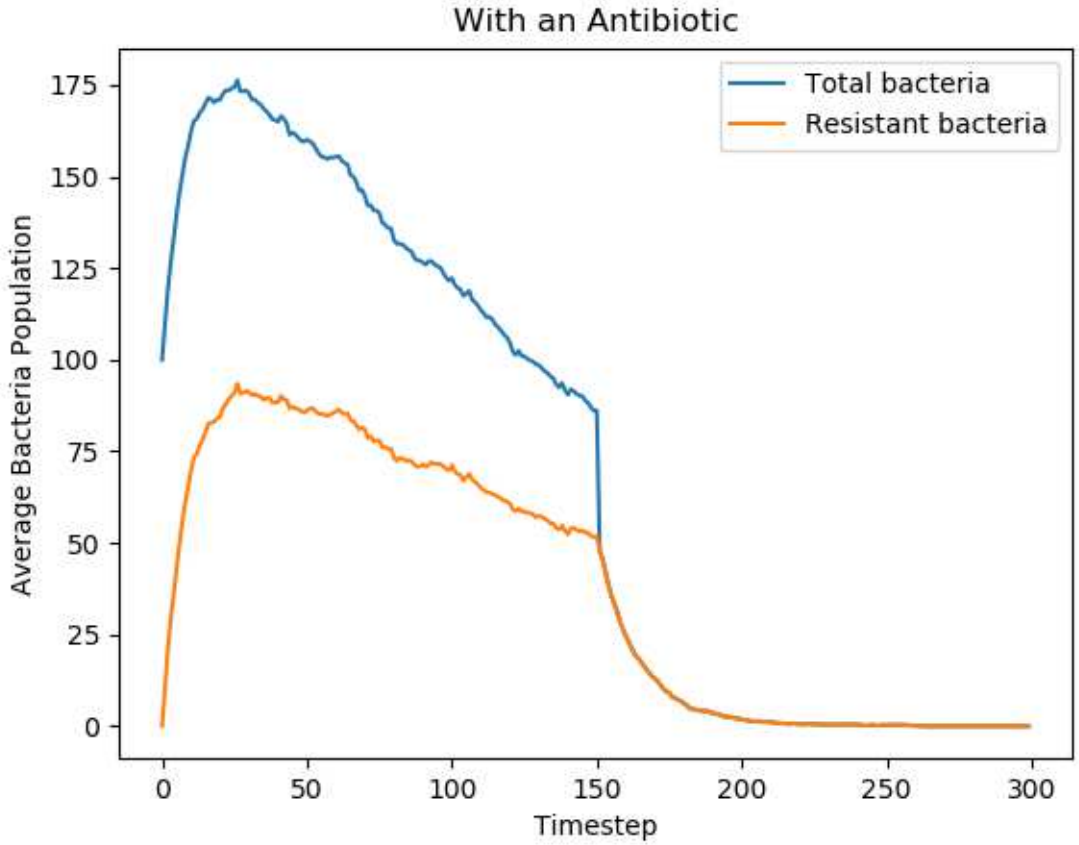


The total bacteria population at time step 299 is 202.26 ± 8.99, with a 95% confidence interval.

The resistant bacteria population at time step 299 is 202.26 ± 8.99, with a 95% confidence interval.

They're the same because the entire population is resistant by time step 299.

Simulation B (lower birth probability):



The total bacteria population at time step 299 is 0.0 ± 0.0, with a 95% confidence interval.

The resistant bacteria population at time step 299 is 0.0 ± 0.0, with a 95% confidence interval.

This time, the numbers are the same because all of the bacteria are dead.