

AMATH 535: Homework Problem 5.2

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**Solution:**

1. Here, the logistic growth term is plotted in red while the functional response is in green.

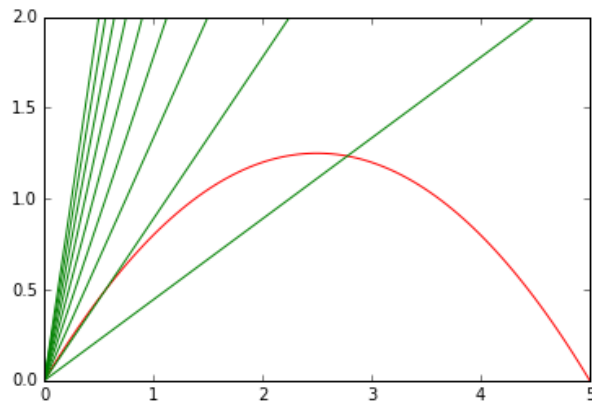


Figure 1: Functional response 1

For the first functional response, the number of equilibria are 1 or 2.

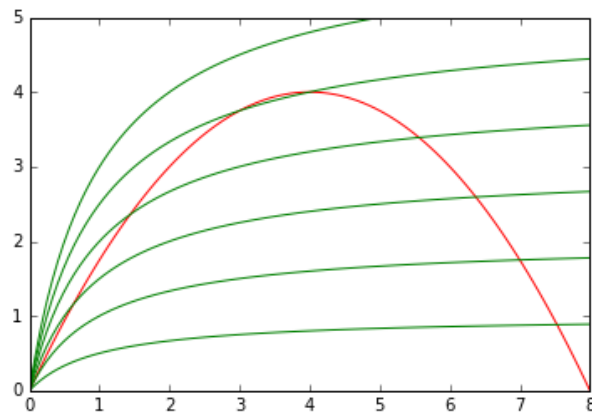


Figure 2: Functional response 2

For the second functional response, the number of equilibria are 1,2 or 3.

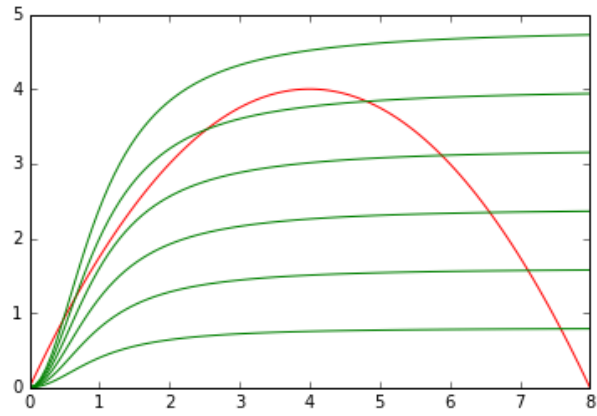


Figure 3: Functional response 3

For the third functional response, the number of equilibria are 2,3 or 4.

2. Here are the bifurcation diagrams.

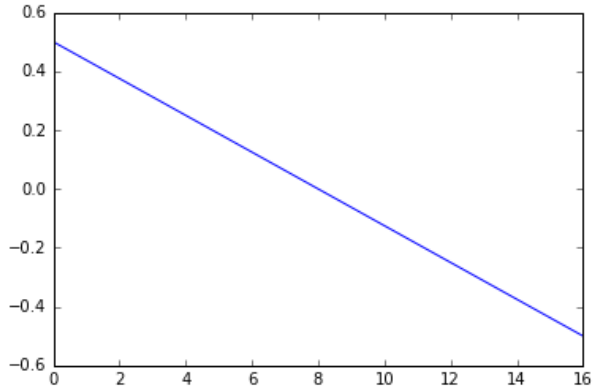


Figure 4: Functional response 1

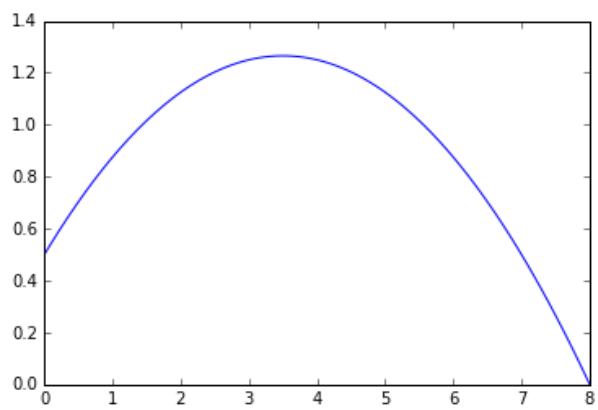


Figure 5: Functional response 2

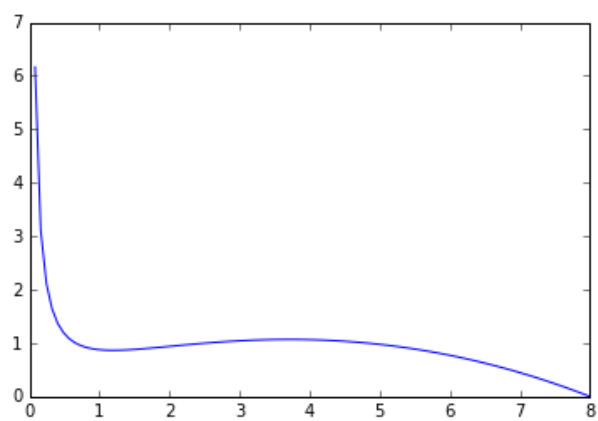


Figure 6: Functional response 3