MATH 209 QUIZ 6 - Version A
March 18, 2014

Name: ANSWERS

Instructions: Write your answers in the space provided. Do not show calculations on this page.

1. Consider the system of ODEs:

$$\frac{dN_1}{dt} = 0.25N_1\left(1 - \frac{N_1}{150} - \frac{N_2}{50}\right)$$

$$\frac{dN_2}{dt} = 0.34N_2\left(1 - \frac{N_2}{100} - \frac{N_1}{50}\right)$$

(a) State the steady states: (0,0), (0,100), (30,40), (150,0) (coordinates!)

(b) Is the system competitive (Yes or No)? Yes

(c) Justify your response to (b) by any method.

Competition table:

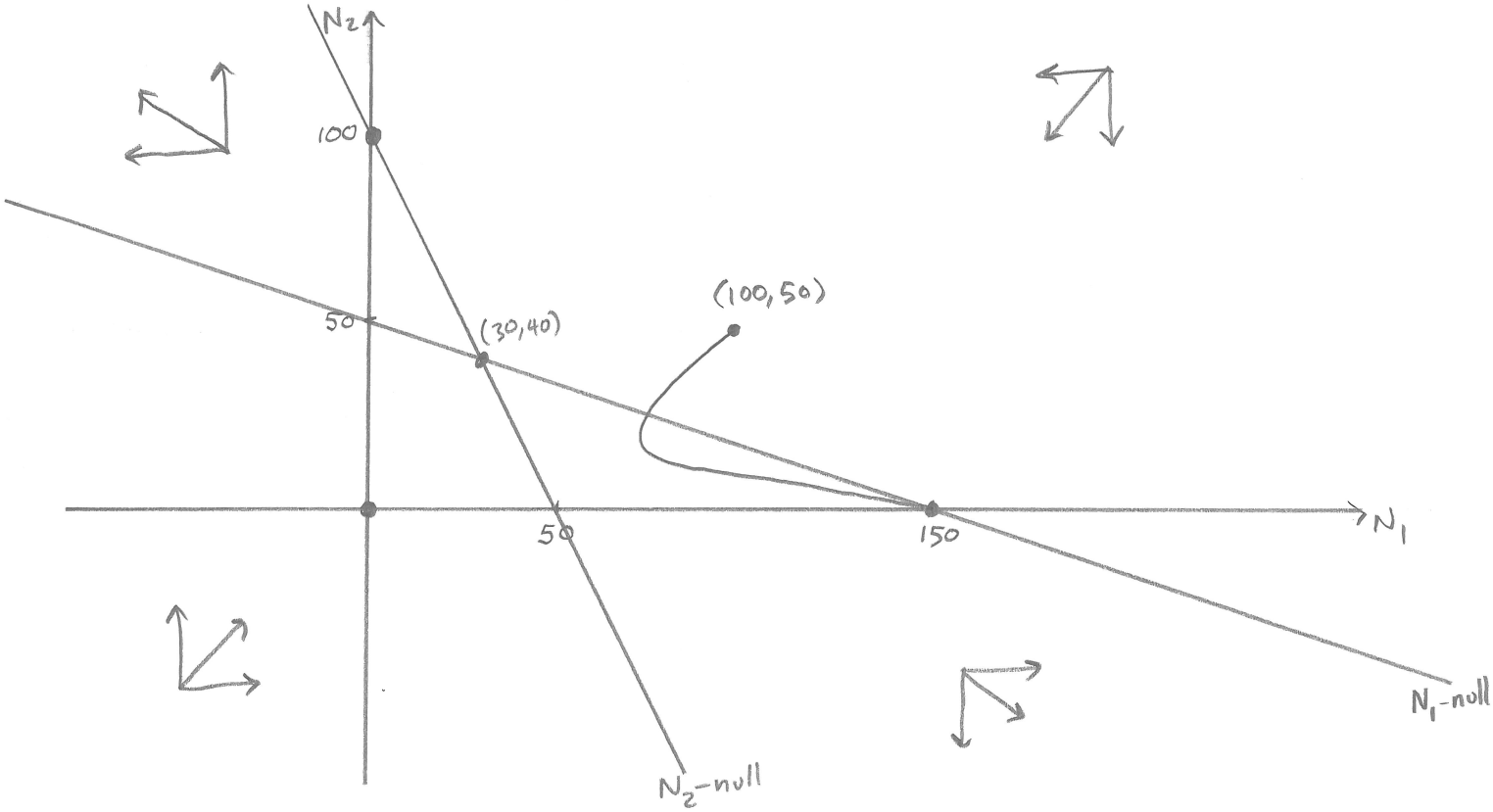
	1	2
1	0.007	0.02
2	0.02	0.01
Tot.	0.027	0.03

⇒ Competitive

OR

Lo's method

(d) Plot the phase plot for the solution curve with initial value $(N_1, N_2) = (100, 50)$. Your answer must include the graphs of nullclines, stability arrows, and the phase plot on fully labeled axes to be considered complete.



Bonus: Consider the data set: 12,3,2,15,12,9,8,12,6,3. What are the:

mean = 8.2 mode = 12 median = 8.5 q_1 = 3 q_3 = 12