Name:

SM275 · Mathematical Methods for Economics   Fall 2019 · Uhan

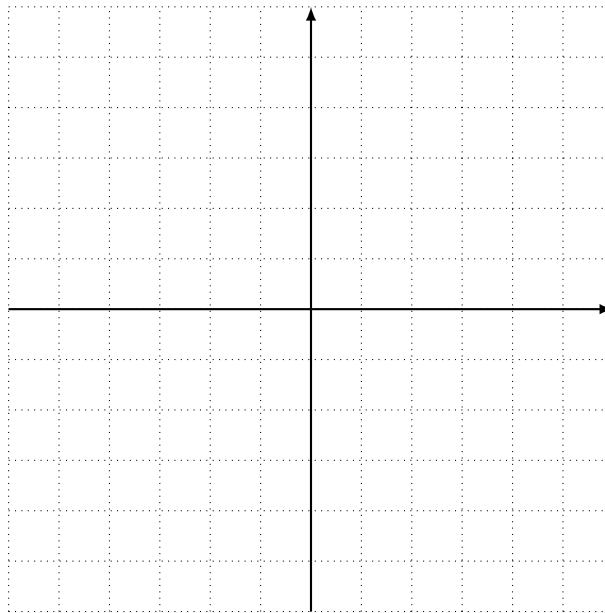# Quiz 2 – 4 September 2019

Instructions. You have 15 minutes to complete this quiz. You may use your calculator. You may <u>not</u> use any other materials (e.g., notes, homework, books).

Problem	Weight	Score
1	1	
2	1	
3	1	
4	1	
5	1	
6	1	
Total		/ 60

For Problems 1, 2 and 3, consider the DS

$$A_{n+1} = \frac{2}{3}A_n + 1 \qquad n = 0, 1, 2, \ldots$$

Problem 1. Draw the cobwebs with $A_0 = 5$ and $A_0 = 1$. Don't forget to indicate the direction of the cobwebs.

Problem 2. What are the fixed points of the DS?

Problem 3. Classify the fixed points you found in Problem 2 as attracting, repelling, or neither.

For Problems 4, 5 and 6, consider the following setting.

We deposit $1000 into a savings account initially and we withdraw $100 at the end of each year. The annual interest rate is 0.05, compounded annually.

Problem 4. Let A_n be the amount in the account after n years. Write the DS and IC for this setting.

Problem 5. Find the particular solution that satisfies the IC.

Problem 6. Use the particular solution you found in Problem 5 to find the amount in the account after 10 years.