MATH 495: Mathematics of Cancer

Quiz 2

NAME: _____ Date: February 16, 2017

Answer the following question on this sheet of paper. No calculators or other electronic devices are permitted.

1. (10 points) Suppose that clinical tumor data is fit to a logistic growth model, so that **in appropriate units** (which you need not worry about), the carrying capacity is 2, and the intrinsic (i.e. small population) growth rate is 1.

   (a) Assuming that the initial population is half the carrying capacity, formulate an initial-value problem (IVP) corresponding to the data, say describing the number of cancer cells N at time t.

   (b) Find the solution of the IVP from part (a).

   (c) What is the long-time behavior of the tumor population? Note that you do not need to solve part (b) to answer this (although you can use the computed solution if you'd like).