Dynamic Models in Biology

Homework 1

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A paper with math equations and formulas

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Simulation is mostly similar to the sketch, although initial values of X under the fixed point at -2 move towards the asymptote of -2 more steeply than those initial conditions between -2 and 2.

**A piece of paper with math equations and formulas

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Similar to the sketch, but initial values above 1 move very steeply towards 1 while those initial values between -1 and 1 move more slowly.

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Pretty much identical to sketch, although initial conditions between 0 and the two fixed points converge more slowly than initial conditions with absolute value greater than 1.

**A notebook with math equations and formulas on it

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I did the simulations in 2 parts, since smaller initial values converge a lot more quickly than larger ones in this system. Initial conditions below 0 converged very quickly, while those between 0 and 4 converged to pi a bit slower. An initial value just under 2pi converged to pi at a longer time scale (although that may have been an artifact of the simulation due to the precision of MATLAB’s representation of pi), while initial values between 2 pi and 3 pi converge to 3 pi very slowly (see the time axis x 10^4).

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Does not

converge

since there

are no

Fixed points