

Homework 2

Math 669, Spring 2022

This homework is due on Wednesday, February 9.

1. From *Mathematical Biology* (Murray), Chapter 1 (pg. 33), #2 and 3
2. This question concerns the article, “Modeling Health Benefits and Harms of Public Policy Responses to the US Opioid Epidemic”, by Pitts, Humphreys, and Brandeau (American Journal of Public Health 2018), available here:
<https://doi.org/10.2105/AJPH.2018.304590>
 - (a) State one scientific question that the article addresses.
 - (b) State one mathematical question that the article addresses.
 - (c) Why are the questions in (a) and (b) important and/or interesting?
 - (d) How do the authors of the article try to answer the questions in (a)–(b)? What type of mathematical model is used (what variables, discrete or continuous time, ODEs or difference equations or...?, etc.)? Does the article involve *forward modeling* or *backward modeling*? Explain.
3. This problem pertains to the referee report provided in class. *If you were the journal editor, ...*
 - (a) What decision would you make (reject, accept, major revision, minor revision, other)? Explain.
 - (b) What more information (if any) would you like the referee to provide?