Homework 1: Evaluating the Accuracy of Linearization

In this homework, you will create reusable code to analyze the accuracy of a linear model. This is based on the [Lecture 9 ipynb notebook](https://drive.google.com/file/d/1wW5QsSAmN8XnqE0ZeG_F5zlLjj900seK/view?usp=sharing). You will do this work in a new Colab notebook that you will put in your student folder (as described in the [class canvas document](https://canvas.uw.edu/courses/1546462)).

You will compare the linearized version of NONLINEAR\_MDL with a Tellurium simulation of the model.

1. (5 pts) Construct a function that takes as input a time and a species name, and outputs a plot that compares a tellurium simulation of the species with a linearized model for the species (with S1 as input, as we did in lecture 9). Remember to document your function and include tests (as described in the [rules for writing reproducible software](https://colab.research.google.com/drive/19MY8Z9jIrLef3vZK1FyZgatIReof-0VH)).
2. (3 pts) Use this function to analyze S2 and S3 for the operating points 0, 0.3, and 2.
3. (2 pts) Where are the largest discrepancies between the original simulation and the linearized models? Why?