

Please indicate your solutions clearly in the document using complete sentences and brief explanations. The point is that you indicate to me what the solution is and how it relates to the context of the question being asked. See the example spreadsheet I posted to the course website and the related video (<https://www.youtube.com/watch?v=1wNrxiceAiQ>) for details on what I consider good form.

Email your spreadsheet file to amohr@nebrwesleyan.edu by 11:59 pm on the due date.

Algebra and Alcohol (Extra Credit)

This exploration asks you to experiment with the surge function $y = atb^t$, which is the product of a linear and an exponential. Such a function rises for a short time before the exponential decay “kicks in”, which is a good model for absorption followed by metabolism.

Here are some notes about the questions in parts I and II (notice the questions are basically identical).

- 1a: Skip this question
- 1b: Graph each function on the same axes using WolframAlpha (you will find this much faster than using the spreadsheet). An example of a command that works well to get all functions plotted simultaneously is:

```
plot {y=x,y=x^2,y=x^3}, x from 0 to 5
```

You will want to supply your own functions and domains as appropriate. Save the image (right click, Save Image As) and import it into your spreadsheet.

- 2a: Estimate the maximum values visually.
- 2b: A rough verbal description is good enough.

Here are some notes about the questions in part III.

- 1a: Estimate the maximum value visually.
- 1b: Include only your best attempt. See the video accompanying Project 2 if you are having trouble getting your spreadsheet to plot a nonstandard function like $y = atb^t$.
- 1c: Skip this question (but use the graph for inspiration).
- 1d: Estimate the solution visually.