

# Lab 02

## Calculus I

23 September 2024, College of the Atlantic

- Please work in groups of two or three
- Please write your answers on this sheet, make a scan of it as a pdf, and upload it google classroom at the end of lab. Use “genius scan” or some similar scanning app. This assignment is not graded.

Names: \_\_\_\_\_

### Part I: Some Graphing Puzzles

Find a formula for each of the functions shown in the graphs below. Check your answers by plotting on wolframalpha.com. Do your best to match the vertical and horizontal scales.

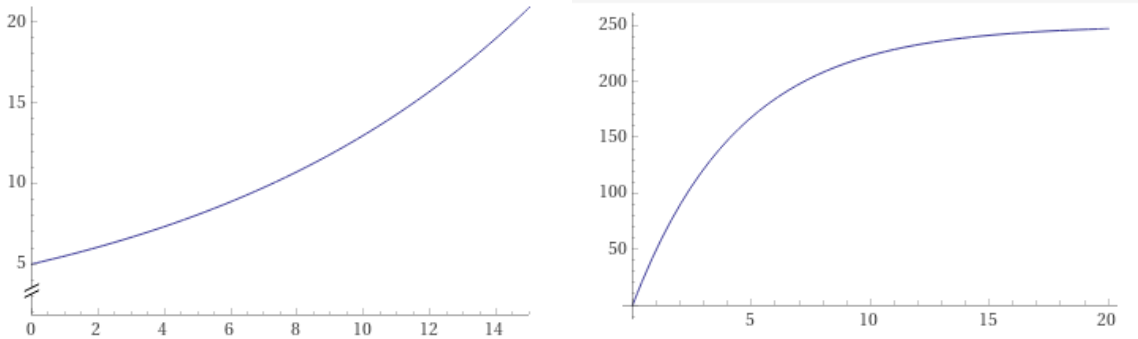


Figure 1: Two unknown functions.

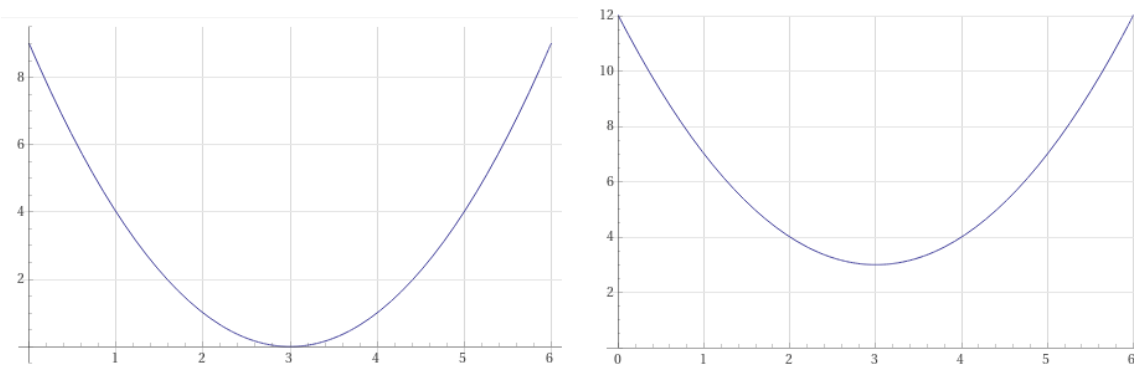


Figure 2: Two more unknown functions.

### Part II: Do some work on your Field Guide

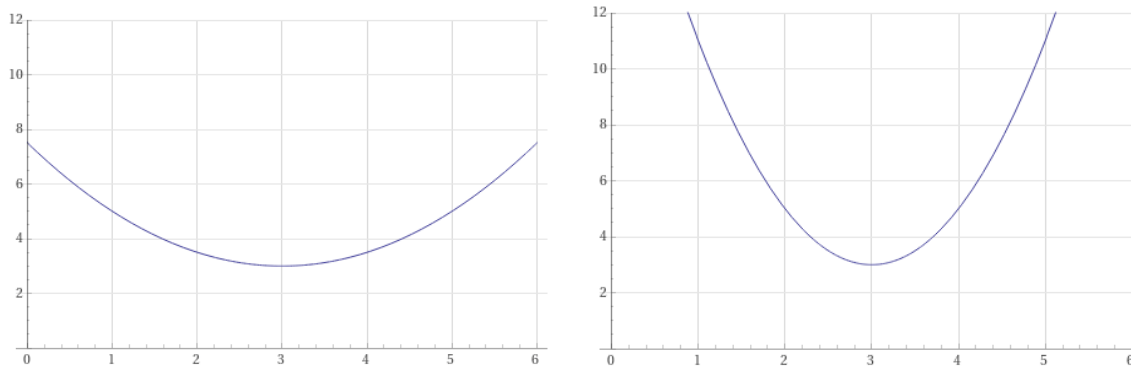


Figure 3: And two more unknown functions.

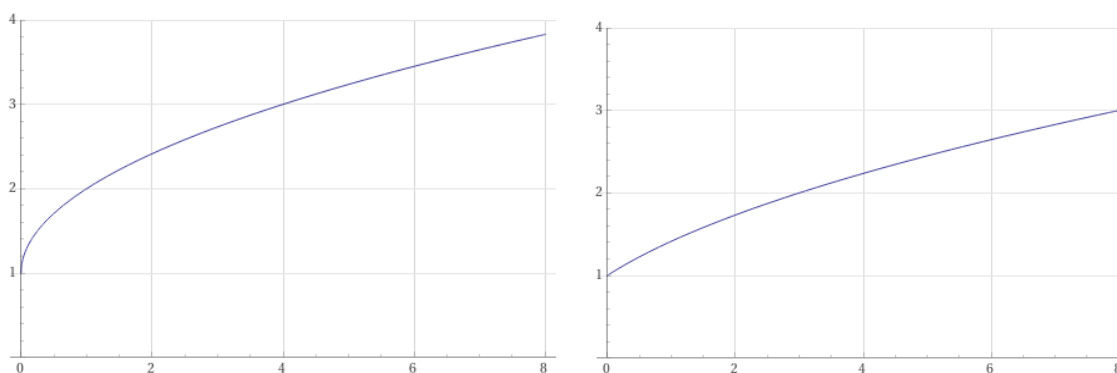


Figure 4: And the last two unknown functions.

- At this point you're in a position to make the field guide for linear, exponential, and power functions. Be sure to discuss how to distinguish between functions that look similar.
- For each type of function, include one or two scientific uses for that function. I.e., an equation from physics, chemistry, biology, etc., that's an exponential, a power function, and so on.
- Spend a chunk of time working today, and also aim to spend around an hour outside of class this week working on the field guide.

A few questions:

1. How is your field guide going? Do you have any questions or concerns?
2. Do you need any more supplies?

## Guidelines for *Field Guide to Functions*

**Target Date: Wednesday 9 October, 2024**

During the first few weeks of the term you will complete a field guide to functions. Some thoughts/guidelines:

- Work in pairs or, at most, groups of three.
- Should include the “basic” functions we’ll cover in the first part of the course, including linear functions, exponentials, sines and cosines, logarithms, power functions.
- Include something about ways to distinguish between similar-looking functions: e.g. exponentials and parabolas.
- Describe all (or most) functions using the rule of four: graphs, equations, words, and tables of values.
- Does not have to be a traditional field guide. Almost any format is fine. Zines, comics, ...
- Have fun! Be creative, artistic, poetic, etc.
- Don’t worry about having a polished final product. A DIY vibe is fine.
- Aim to spend around one–two hours a week outside of class and lab on this assignment.