

Lab 04

Calculus I

03 October 2022, 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. This assignment is not graded.

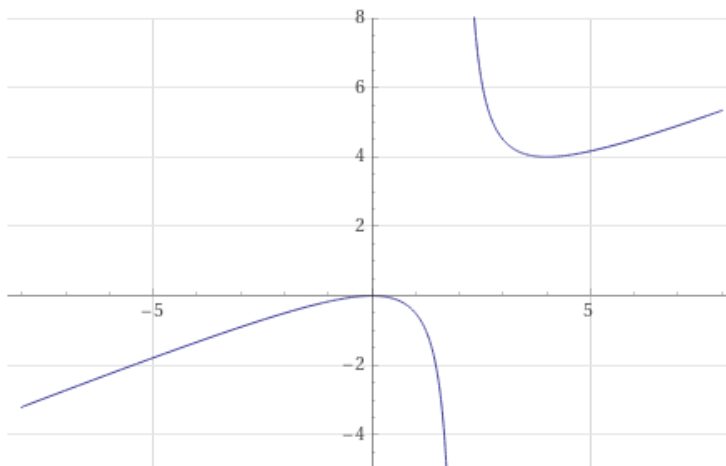
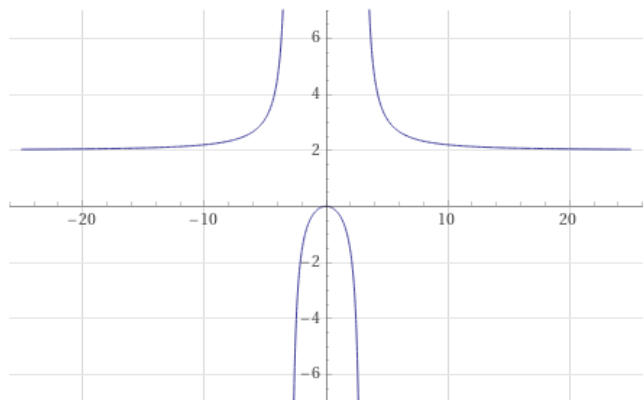
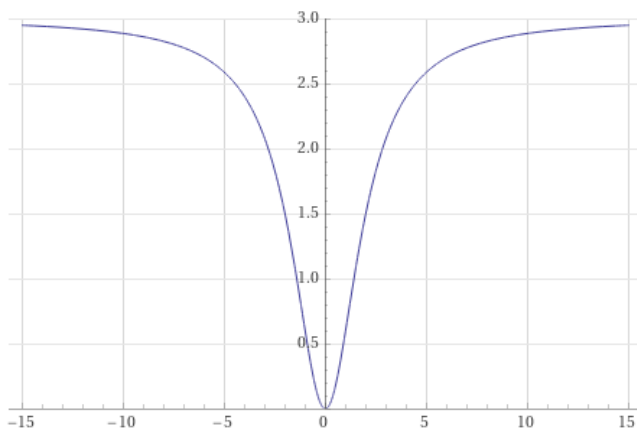
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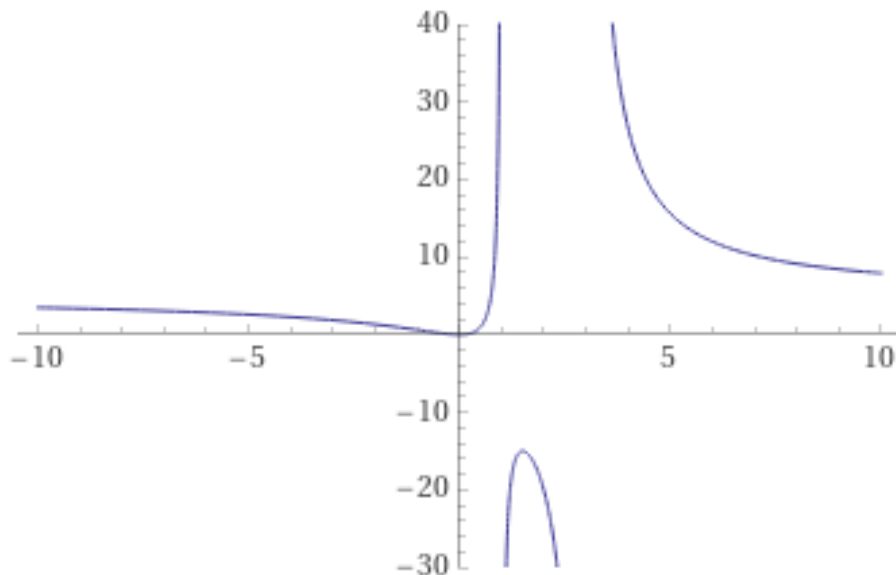
Part I: Rational Function Puzzles

Each of the plots below are of a different rational function. Each rational function is of the form:

$$f(x) = \frac{Ax^2 + Bx + C}{Dx^2 + Ex + F} \quad (1)$$

Your task is to find possible value of the constants A, B, C, D, E, and F that yield a plot qualitatively similar to each plot shown below.





Part III: Field Guide Work

- Target date for field guide completion: **Friday, October 7.**
- Your field guide should include the following families of functions:
 - linear
 - exponential
 - power
 - log (“natural” and “unnatural”)
 - trig (sine and cosine)
 - polynomials

There is no need to include rational functions.

- For each type of function, include one or two scientific or mathematical uses for that function. I.e., an equation from physics, chemistry, biology, etc., that’s an exponential, a power function, and so on.
- There is no need to focus on having a super-polished final product.
- Think of these as a fun and possibly playful or artistic set of notes for yourself.
- The goal of this exercise is for you to synthesize some of what we’ve covered in the first few weeks of the class.