EVR-5086 Assignment 1 - Calculus Review

Adyan Rios

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Introduction

I learned that there are various ways that I can create and execute Python chunks in R Studio (Velásquez 2021). Although EVR-5086 class is being taught using python, I have advanced skills in R that I hope will be complementary to the course. I am also fond of sharing science on GitHub. I have learned how GitHub pages combined with Quarto and R Studio are an extraordinary resource for developing and maintaining lab notebooks. In order to get better at using these tools and the reproducibility and accessibility of my future research, I have created a html quarto book and pdf to show my work associated with the course assignments.

Set Up

I started by creating a GitHub account (arios101-fiu) and a GitHub repository with a gitignore and readme.md (EVR-5086-Assignment1). I cloned the repository into R Studio, thereby creating a R project. I copied in a _quarto.yml and index file from another project. I simplified the index file and inserted a reference to create a new reference.bib. I updated the yml, rendered, committed and pushed. Next, I turned on GitHub pages and updated the URLs in the yml and repository. On to the assignment...

1 Plot the polynomial between x = -1 and x = 1

Observations and the limitations of the numerical derivative. One method is an instantaneous change (associated with he tangent line. The other is an average rate of change between two points.

```r
# Define variables
a <- 1
n <- 1
b <- 1
p <- 2
c <- 1
q <- 3

# Create vectors and data frame
x <- seq(from = -1, to = 1, by = 0.1)

# Plot the analytically derivative as a solid line and the numerical derivative as open symb
```

Velásquez, Isabella. 2021. "Posit." https://www.posit.co/.