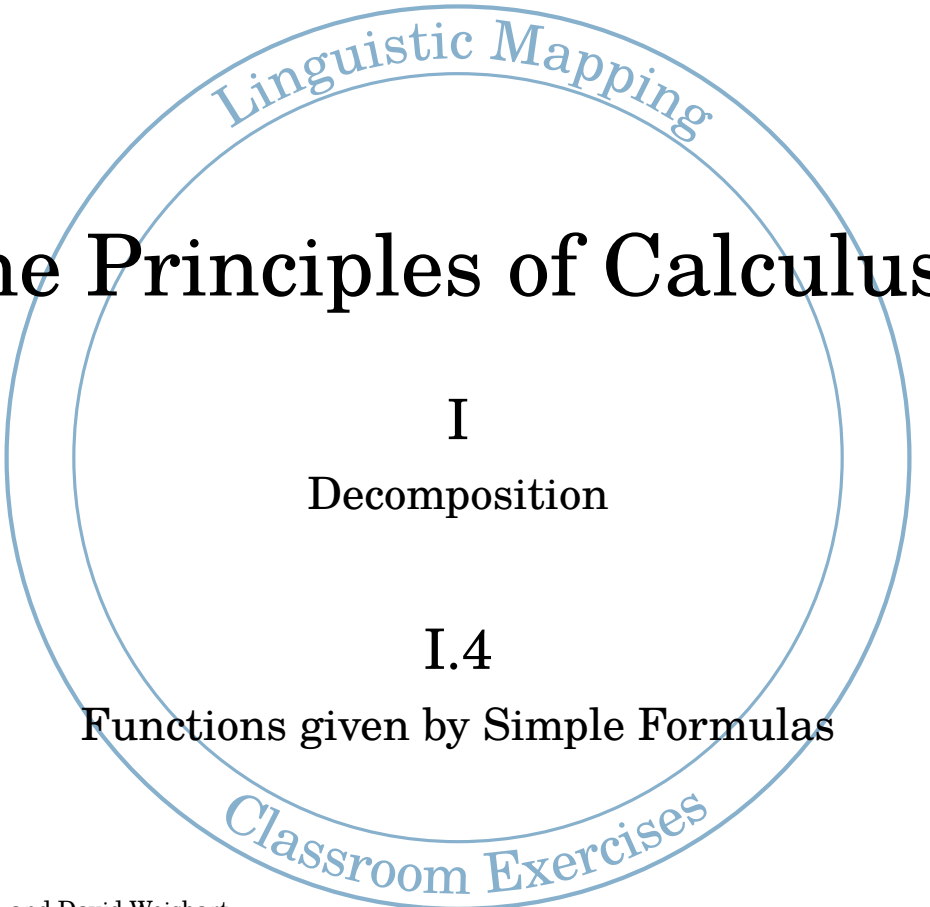


The Principles of Calculus I

I

Decomposition

I.4

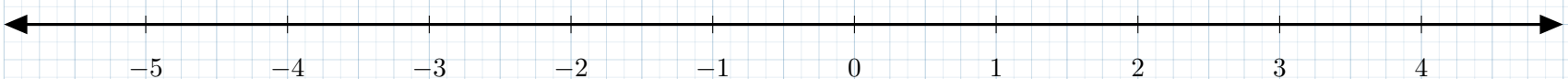
Functions given by Simple Formulas

Exercise 1

Take f to be the function that is given by the formula

$$f(x) = \frac{(x+2)(x-1)(x-4)}{(x+5)(x-3)(x-4)}.$$

Sketch the domain of f on a real number line.



Exercise 2

Take f to be the function that is given by the formula

$$f(x) = \frac{(x+2)(x-1)(x-4)}{(x+5)(x-3)(x-4)}.$$

Determine real numbers a and b so that the points $(1, a)$ and $(2, b)$ are in f.

Exercise 3

Take f to be the function that is given by the formula

$$f(x) = \frac{(x+2)(x-1)(x-4)}{(x+5)(x-3)(x-4)}.$$

Evaluate f at 1 and 2.

Exercise 4

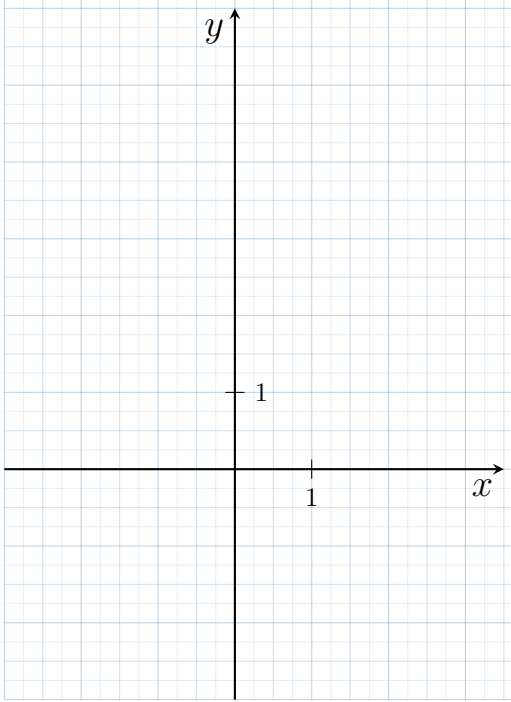
Take f to be the function that is given by the formula

$$f(x) = \frac{(x+2)(x-1)(x-4)}{(x+5)(x-3)(x-4)}.$$

Determine $f(1)$ and $f(2)$.

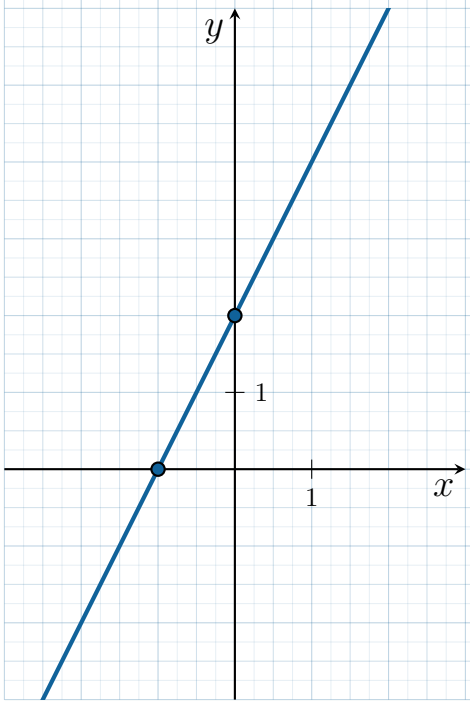
Exercise 5

Use similar triangles to determine an equation for the line that passes through the points $(-1, -2)$ and $(2, 4)$. Sketch this line and then use set builder notation to describe the line as a function (a subset of $\mathbb{R}^2$).



Exercise 6

Identify the x-intercept and y-intercept of this line:



Exercise 7

A line L has x-intercept equal to 2 and a y-intercept equal to 5. Determine an equation for the line.

Exercise 8

A line L_1 has an x-intercept equal to -2 and line L_2 has an x-intercept equal to 3.

(a) Determine all possible y-intercepts for L_1 so that the slope of L_1 is positive.

(b) Determine all possible y-intercepts for L_2 so that the slope of L_2 is positive.