

Lesson 6

Read Chapter 5

Functions, domain range, inverse

What is a function?

Domain and Range

Example: $f(x) = x^2$

Interval notation

$(2, 3)$ means all x with $2 < x < 3$

$[2, 3]$ means all x with $2 \leq x \leq 3$

$[2, 3)$ means all x with $2 \leq x < 3$

$(-\infty, +\infty)$ means all x in \mathbb{R}

Find the (natural) domain of $f(x) = \frac{\sqrt{x+1}}{x-5}$

$\ln \text{EXPR}$ requires $\text{EXPR} > 0$

$\sqrt{\text{EXPR}}$ requires $\text{EXPR} \geq 0$

$\frac{\text{SOMETHING}}{\text{EXPR}}$ requires $\text{EXPR} \neq 0$

x and y intercepts

Given $y = f(x)$

To find y intercept calculate $f(0)$

To find x intercept(s) set $f(x) = 0$ and solve for x

Find x and y intercepts for $f(x) = x^2 - 5x + 6$

Algebraic manipulations

Given $f(x) = \frac{\sqrt{x+1}}{x-5}$ calculate $f(1+h)$

Given $f(x) = \sqrt{x-8}$ simplify $\frac{f(x+h)-f(x)}{h}$ enough so that plugging in $h = 0$ is allowed