

8/27

Day 1: Syllabus, overview, pictures, plus

What's a function? Discuss domain, range
↓
two perspectives.

Examples

E.g. stock price at the end of trading of FB = facebook.

ask $\left\{ \begin{array}{l} \text{Inputs: day} \\ \text{Output: price (in dollars)} \end{array} \right.$

e.g. Temperature at FAI as a function of time
↳ nice and continuous!

Our functions: domain: \mathbb{R}
range: \mathbb{R} , or some subset

e.g. $f(x) = \frac{1}{x}$

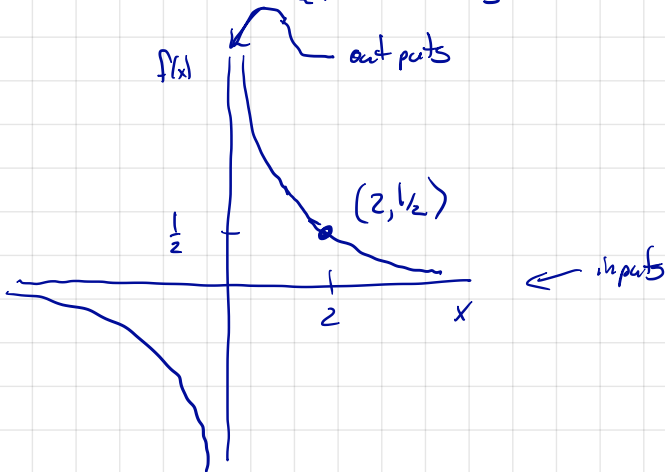
input \swarrow
output \nwarrow

domain: informally: $x \neq 0$
formally: $(-\infty, 0) \cup (0, \infty)$

\downarrow

$\{x: 0 < x < \infty\}$

Graph:



range: $\mathbb{R} \setminus \{0\} = (-\infty, 0) \cup (0, \infty)$ \leftarrow preferable, alas

Piecewise-defined functions

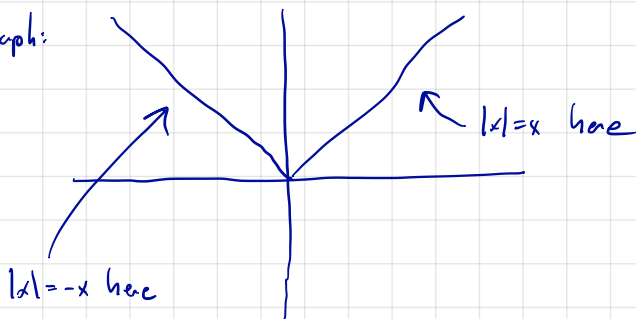
e.g: $f(x) = |x| = \begin{cases} x & : x \geq 0 \\ -x & : x < 0 \end{cases}$

$$|-7| = 7$$

$$|\pi| = \pi$$

↑
piecewise-defined function

Graph:



domain: \mathbb{R}

range: $[0, \infty)$

Handed out WS - 1 - 1