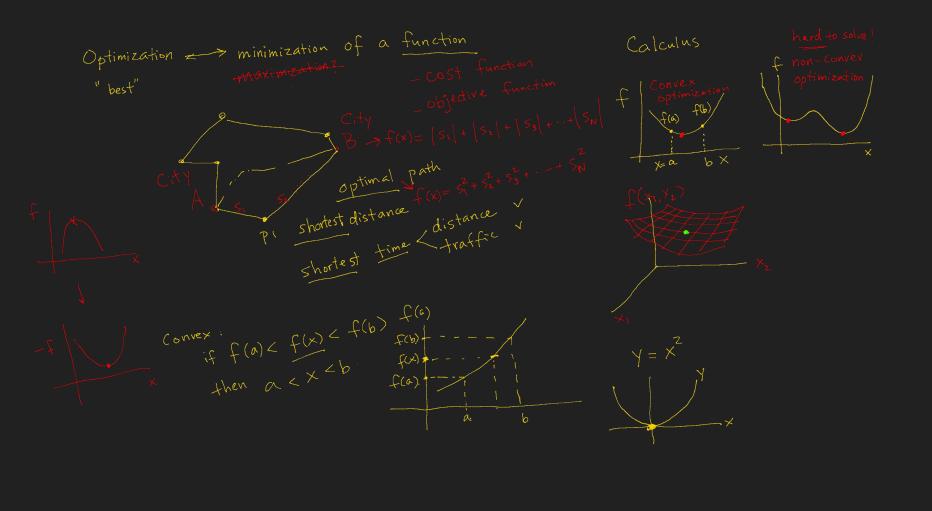
## Numerical Computing using Python Lecture 6

2020-07-30



$$\left(\frac{1}{2}\right)$$

$$\frac{1}{2} + \frac{1}{3}$$

$$\left(\frac{1}{2}\right)$$

Symbolically 
$$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$
 | Erational (exactly)

$$f(x) = \sqrt{x_1^2 + x_2^2}$$

$$x = \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \left(x_1^2 + x_2^2\right)^2$$

$$\frac{2}{2} = \frac{1}{2} \left( \frac{2}{2} + \frac{2}{2} \right)^{\frac{1}{2}} \cdot \left( \frac{2}{2} + \frac{1}{4} \right)$$

$$= \frac{2}{2} \left( \frac{2}{2} + \frac{2}{2} \right)^{\frac{1}{2}} = \frac{2}{2} \left( \frac{2}{2} + \frac{1}{4} \right)^{\frac{1}{2}}$$

$$= \frac{2}{2} \left( \frac{2}{2} + \frac{2}{2} \right)^{\frac{1}{2}} = \frac{2}{2} \left( \frac{2}{2} + \frac{1}{4} \right)^{\frac{1}{2}}$$

$$f(x) = \log(x^2 + 1)$$

$$\frac{df}{dx} = \frac{1}{x^2 + 1} \cdot 2x$$