Day #11: beamer and special LaTeX

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custom commands in LaTeX

Suppose we were interested in discussing derivatives, we might write

$$f'(x) = \frac{df}{dx} = \dot{f}(x) = D_f = D[f](x)$$

Let's use a special command for taking derivatives, which we define in the preamble. We might want

$$\frac{d^3y}{dt^3}, \frac{df}{dx}$$

We can extend this,

$$\frac{\partial^3 f}{\partial x^2}$$

Other commands

For a limit,

$$\lim_{z \to \infty} z^2$$

$$\begin{Bmatrix} a & b & c \\ c & d & e \\ e & f & g \end{Bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

Mathematical functions

Consider the following,

$$\sin(x), \cos(x), \tan(x), \sqrt{x}, \sqrt[3]{x}, \sqrt[n]{x}, \arcsin(x), \log(x), \ln(x), \exp(x).$$

What about something like the base-2 logarithm?

$$\log_2(x)$$

Note that,

$$\ln(x) = \log_e(x)$$

New mathematical functions

Consider our matrix

$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

Consider the quantities below,

- $\text{tr}(A) = a + d$
- $\det(A) = ad - bc$

Still other functions

Consider the absolute value function,

$$\text{abs}(x) = |x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$