

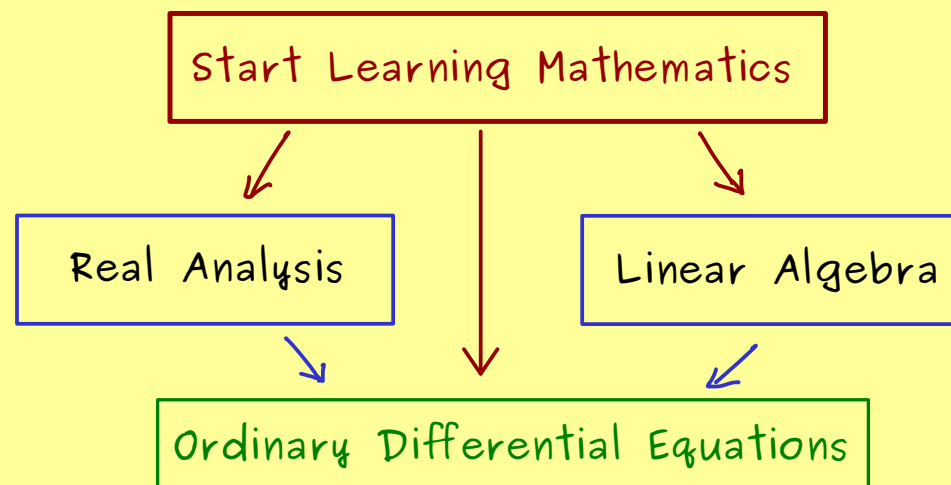


Ordinary Differential Equations – Part 1

$$f' = f \leftarrow$$

search for a function f that satisfies this?

$$f(x) = e^x$$



Other examples: (a) $\ddot{x} = -\omega^2 x$ (harmonic oscillator) (second order derivatives)

(b)

$$\left. \begin{aligned} m \cdot \ddot{x} &= F \\ m \cdot \ddot{y} &= F \\ m \cdot \ddot{z} &= F \end{aligned} \right\} \text{system of differential equations}$$

- Topics:
- system of ordinary differential equations (ODE)
 - solution methods
 - existence and uniqueness of solutions
 - linear ordinary differential equations (matrix exponential function)