

# LECTURE 1

Linear ODE's with constant coeffs.

E.g.  $a \frac{d^2 f}{dx^2} + b \frac{df}{dx} + c f = 0$

Try an exponential

$$f(x) = A e^{\lambda x}$$

→ auxiliary equation for  $\lambda$

$$a \lambda^2 + b \lambda + c = 0 \quad \text{roots } \lambda_{1,2}$$

General solution: linear superposition

$$f(x) = A_1 e^{\lambda_1 x} + A_2 e^{\lambda_2 x}$$

↑  
constants of integration

- from boundary conditions