Week 1 Summary:

- In many real-world situations, there are simple relations between a function and its derivatives. These can be expressed as differential equations.

- Exponential growth: \( y' = ky \)

- Exponential decay: \( y' = -ky \)

- Decay → value: \( y' = k(A-y) \).

- Slope fields: A way to "visualize" all solutions to an ODE.
  
  We can sketch a slope field quickly using isoclines:
  
  Set \( y' = \text{const.} \), plot the resulting line/curve.

- Plotting solutions to autonomous ODEs: \( y' = f(y) \).
  
  First, sketch the steady-state solutions.