

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 \rightarrow 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.