

M351 AHw§2.1 (S. Zhang) .

1. (2.1:a1) Make a table for y' and plot the direction field, including at least points $(0,1)$, $(1,1)$ and $(1,0)$. Then sketch the solution curve corresponding to the given initial condition. Finally, use this solution curve to estimate the desired value of the solution:

$$\frac{dy}{dx} = y - x; \quad y(0) = 1, \quad y(3) = ?$$

2. (2.2:a2) Construct a table for y' , y'' and solution curve $y(x)$ shapes. Find and classify critical points Sketch phase portrait (phase line + direction field). Sketch all typical solution curves on the graph of direction field.

$$y' = 4y - y^2.$$