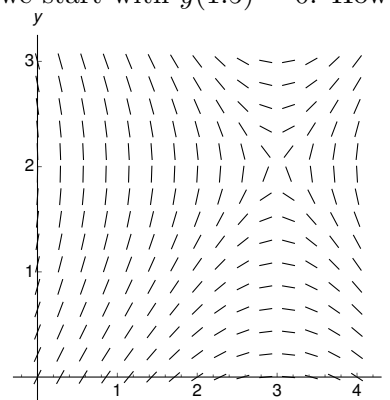


3. [12 points] Suppose we are solving the initial value problem $y' = \frac{t-3}{y-2}$, $y(0) = y_0$.

- a. [6 points] A direction field for the differential equation is shown to the right, below. Using this and your knowledge of the differential equation, explain what the solution will look like if we start with the initial condition $y(0) = 0$, and if we start with $y(1.5) = 0$. How, and why, are these solutions different?

(The printed exam copy had $y(1) = 0$ for the second initial condition. This was supposed to be $y(1.5)$; through $(0, 1)$ the solution is $y = t - 1$.)



- b. [6 points] Solve the problem with initial condition $y(0) = 0$. Based on your solution, for what values of t and y does your solution exist? How is this related to the existence and uniqueness theorem?