

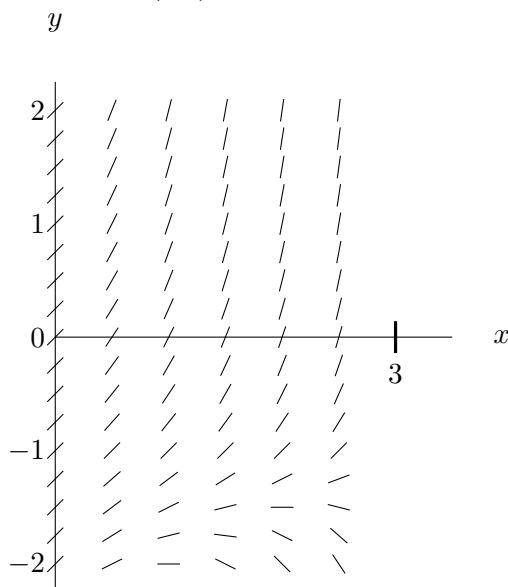
2. [11 points] Kazilla sends you on a very important trip to the store. Rather than give you directions, she provides you with the differential equation

$$\frac{dy}{dx} = x + xy + 1$$

which gives x - and y -coordinates on your map. Your current position on the map is the point $(0, -1)$.

- a. [1 point] Is this differential equation separable? Circle one. **Yes** **No**
- b. [5 points] Kazilla tells you to follow the solution curve to the differential equation from your current position to $x = 1.5$ to find the location of the store on the map. Use Euler's method with step size $\Delta x = 0.5$ to approximate the y -coordinate of the store.

- c. [2 points] The slope field of the differential equation is given below. Sketch the solution passing through $(0, -1)$. The point $(3, 0)$ is labeled for scale.



- d. [3 points] Is the estimate for the position of the store you found in part (b) above or below the actual position of the store on your map? Justify your answer.