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.

\[ y \]

\[ x \]

\[ 2 \]
\[ 1 \]
\[ 0 \]
\[ -1 \]
\[ -2 \]

\[ 3 \]

\[ \]