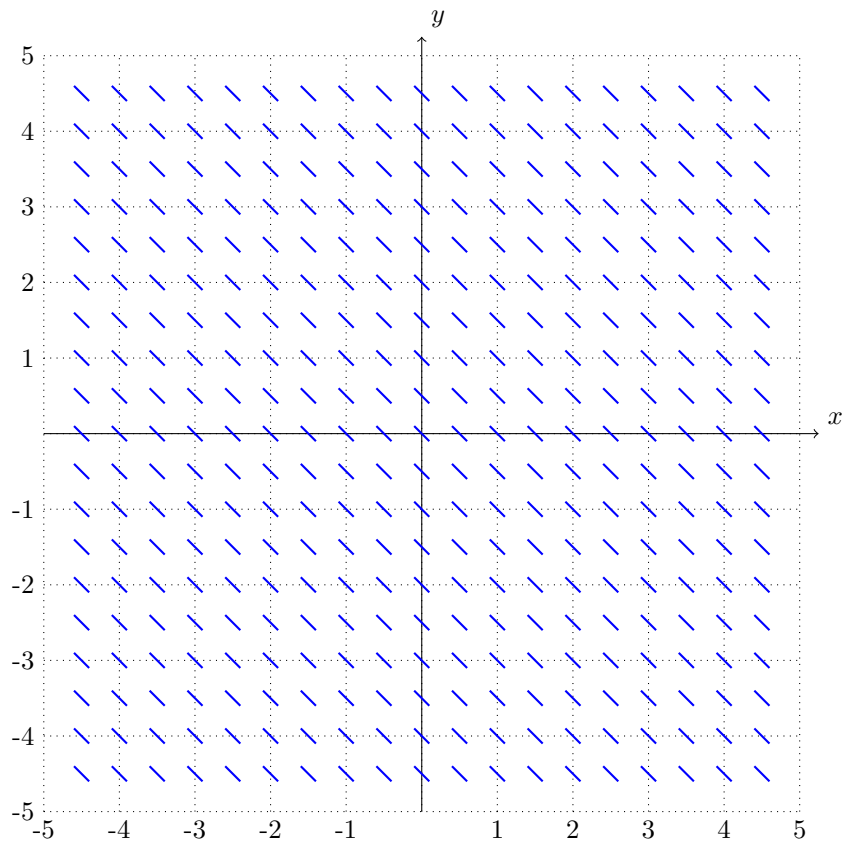


1. Find the solution that passes through the following point:  $(1, 2)$ .



2. Consider the system

$$\begin{cases} x'(t) = x + 5y \\ y'(t) = -5y + x \end{cases}$$

such that  $x(1) = y(1) = -5$ .

Fill in the table with both the approximation values obtained using Euler's method with step size 0.25:

t	$x(t) \approx$	$y(t) \approx$
1		
1.25		
1.5		
1.75		
2		

Note: the approach should look something like this.

Let  $x'(t) = f(x, y)$  and  $y'(t) = g(x, y)$  then,

$$x_{k+1} = x_k + f(x_k, y_k)\Delta t$$

$$y_{k+1} = y_k + g(x_k, y_k)\Delta t$$

where  $x_1 = x(1)$  and  $y_1 = y(1)$ .