

# HW5 (key steps)

(a)  $\frac{dy}{dx} = \frac{b}{a} = 2$

$$y = 2x + C.$$

(b)  $J = \begin{vmatrix} 1 & 2 \\ 1 & 2 \end{vmatrix} = 0$

$\Rightarrow \begin{cases} \text{no solution} \\ \text{or: } \infty \text{ many solutions.} \end{cases}$

along  $\Gamma(s)$ :  $\begin{cases} x = s \\ y = 2s \\ u = 1 \end{cases}$

(i)  $\frac{du}{ds} = 0$

(ii)  $\frac{du}{ds} = u_x x_s + u_y y_s = u_x + 2u_y = u^2 = 1$

contradiction.

So no solution.

[Your solution is also fine].