$$y' + 5y = 0 \quad \Big| \quad \frac{dy}{dx} = -5y$$

$$y' = -5y \quad \Big| \quad \int \frac{1}{y}\,dy = \int -5\,dx$$

$$\ln|y| = -5x + C_1$$

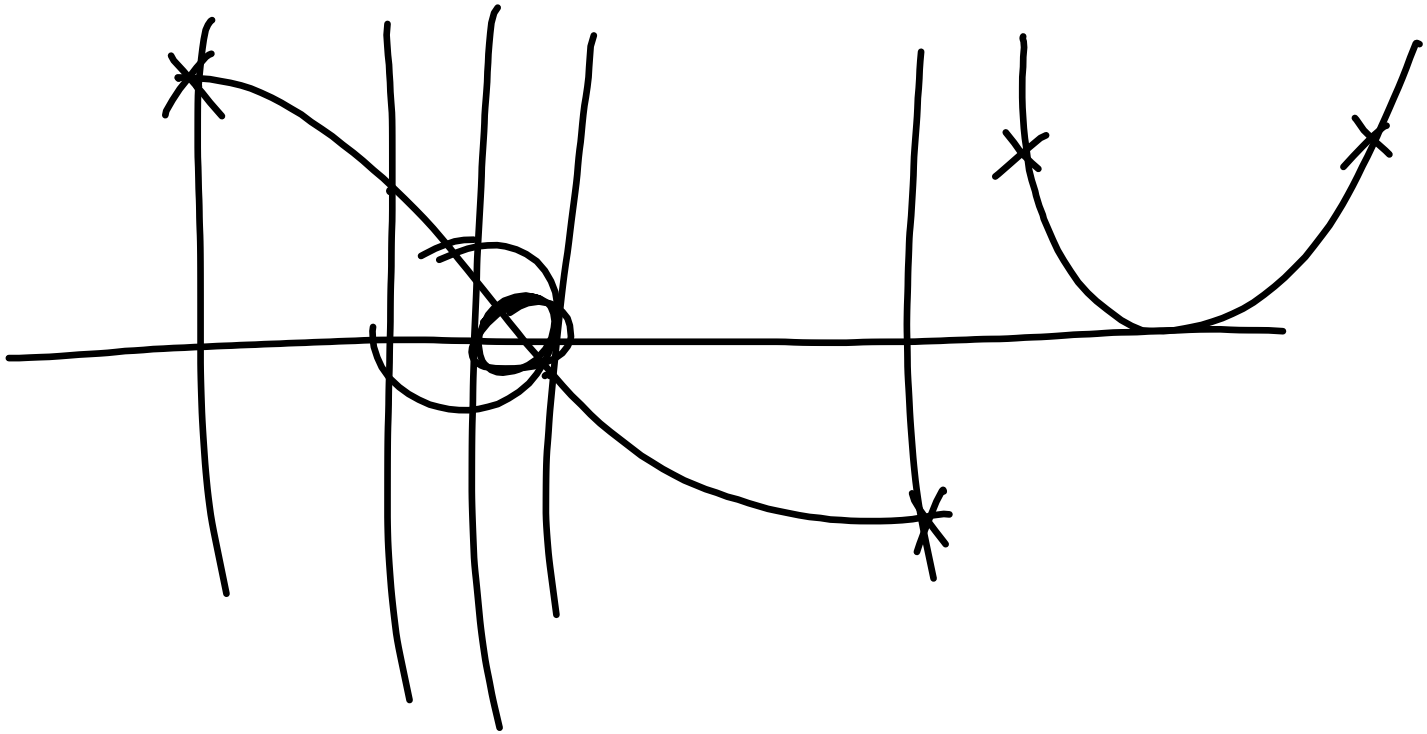
$$|y| = e^{-5x+c_1} = e^{-5x} \cdot e^{c_1}$$

$$c_2$$

$$e^{\lambda \cdot x}$$

$5 \Rightarrow$ 3-más. kořen.

$\Rightarrow e^{5x}, x \cdot e^{5x}, x^2 \cdot e^{5x}$



$\lambda = 3 \pm 4i \rightarrow$ 3-mas. k.

$e^{(3\pm 4i)\cdot x}, \; x \cdot e^{(3\pm 4i)\cdot x}, \; x^2 \cdot e^{(3\pm 4i)\cdot x}$

$e^{3x}\cdot\cos 4x, \; e^{3x}\cdot\sin 4x \;|\; x\cdot e^{3x}\cdot\cos 4x, \; x\cdot e^{3x}\cdot\sin 4x \;|\; \ldots$

$$\begin{vmatrix} 1 & 1 & 1 \\ \lambda_1 & \lambda_2 & \lambda_3 \\ \lambda_1^2 & \lambda_2^2 & \lambda_3^2 \end{vmatrix} = \begin{vmatrix} 1 & 1 & 1 \\ 0 & \lambda_2-\lambda_1 & \lambda_3-\lambda_1 \\ 0 & \lambda_2^2-\lambda_1^2 & \lambda_3^2-\lambda_1^2 \end{vmatrix} =$$

$$= \begin{vmatrix} 1 & 1 & 1 \\ 0 & \lambda_2-\lambda_1 & \lambda_3-\lambda_1 \\ 0 & 0 & (\lambda_3^2-\lambda_1^2)-(\lambda_3-\lambda_1)\cdot(\lambda_2+\lambda_1) \end{vmatrix} =$$

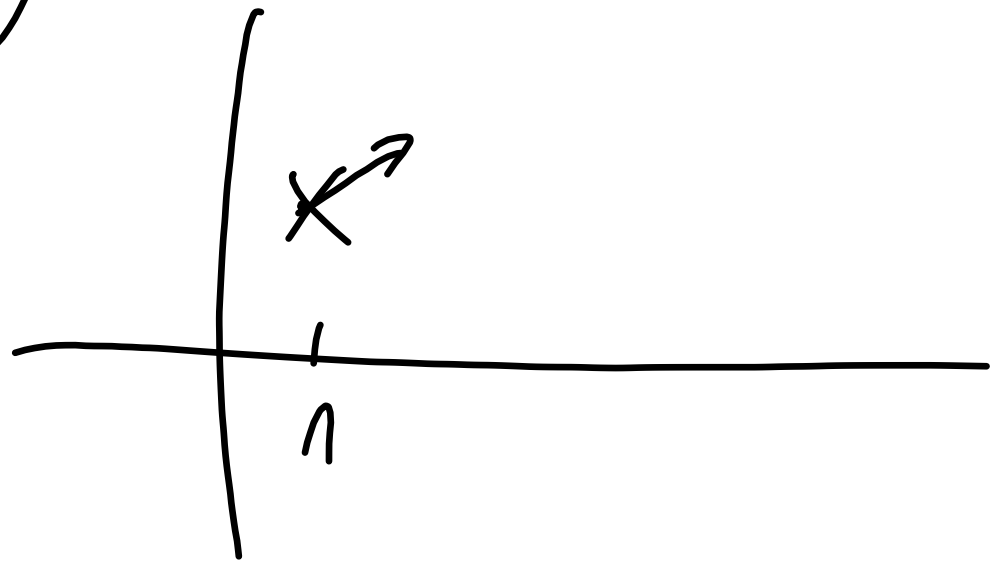
$$= 1 \cdot (\lambda_2 - \lambda_1) \cdot \underbrace{(\lambda_3^2 - \lambda_1^2)}_{(\lambda_3 - \lambda_1)\cdot(\lambda_3 + \lambda_1)} - (\lambda_3 - \lambda_1)(\lambda_2 + \lambda_1)$$

$$= (\lambda_2 - \lambda_1)\cdot(\lambda_3 - \lambda_1)\cdot[\lambda_3 + \lambda_1 - \lambda_2 - \lambda_1)$$

$$e^{(\alpha \pm i)\cdot x} \rightarrow e^{\alpha x}\cdot \cos 1x,\ e^{\alpha x}\cdot \sin 1x$$

$0+1i$

$$y = c_1 \cdot g(x) + c_2 \cdot h(x)$$



$$y' = c'y_1 + cy_1' + d'y_2 + dy_2' =$$

$$= \underbrace{c'y_1 + d'y_2}_{=0} + cy_1' + dy_2'$$

$m = \ln x \neq SPS$