

$$\frac{d^2 y}{dt^2} - 8 \frac{dy}{dt} + 16y = 5e^{4t}$$

$$\frac{d^2 y}{dt^2} - 8 \frac{dy}{dt} + 16y = 0$$

$$m^2 - 8m + 16 = 0$$

$$m_1 = 4 \quad m_2 = 4$$

$$m_1 = m_2 \in \mathbb{R}$$

Caso II.

$$\rightarrow (m-4)^2 = 0$$

$$y_H = C_1 e^{4t} + C_2 t e^{4t}$$

$$y_{NH} = A e^{4t} + B t e^{4t}$$

$$\begin{bmatrix} y_1 & y_2 \\ y'_1 & y'_2 \end{bmatrix} \begin{bmatrix} A' \\ B' \end{bmatrix} = \begin{bmatrix} 0 \\ Q(t) \end{bmatrix}$$

$$\begin{bmatrix} A' \\ B' \end{bmatrix} = \begin{bmatrix} 0 \\ Q(t) \end{bmatrix} \begin{bmatrix} y_1 & y_2 \\ y'_1 & y'_2 \end{bmatrix}^{-1}$$

$$\frac{dy}{dx} + p(x)y = q(x)$$

$$SG \Rightarrow y(x) = C_1 e^{-\int p(x) dx} + e^{-\int p(x) dx} \int e^{\int p(x) dx} q(x) dx$$

Annotations for the first term:  $\downarrow$  int(  $\downarrow$  cos(  $\uparrow$  solve(  $\downarrow$  exp(  $\uparrow$  ) ) )  
 Annotations for the second term:  $\uparrow$  diff(  $\uparrow$  sin( ) )