

Ex 3 - $\boxed{\gamma'' - 5\gamma' + 6\gamma = 0}$ $\left. \begin{array}{l} \gamma_1 = e^{2x} \\ \gamma_2 = e^{3x} \end{array} \right\}$ soluções?

• $\boxed{\gamma_1 = e^{2x}} \rightarrow \gamma_1' = 2e^{2x} \rightarrow \gamma_1'' = 4e^{2x}$

$$\gamma_1'' - 5\gamma_1' + 6\gamma_1 = 4e^{2x} - 10e^{2x} + 6e^{2x};$$

$$= \{4 - 10 + 6\} e^{2x} = \{10 - 10\} e^{2x};$$

$$\gamma_1'' - 5\gamma_1' + 6\gamma_1 = 0. \quad \therefore \boxed{\gamma_1 = e^{2x} \text{ é solução}}$$

• $\boxed{\gamma_2 = e^{3x}} \rightarrow \text{ANÁLOGO!} \quad \boxed{\gamma_2 = e^{3x} \text{ é solução}}$

• $\boxed{\gamma = C_1 e^{2x} + C_2 e^{3x}} \text{ ① é solução?}$

$$\boxed{\gamma' = 2C_1 e^{2x} + 3C_2 e^{3x}} \text{ ②} \Rightarrow \boxed{\gamma'' = 4C_1 e^{2x} + 9C_2 e^{3x}} \text{ ③}$$

$$\gamma'' - 5\gamma' + 6\gamma = 4C_1 e^{2x} + 9C_2 e^{3x} - 5\{2C_1 e^{2x} + 3C_2 e^{3x}\} + 6\{C_1 e^{2x} + C_2 e^{3x}\};$$

$$\gamma'' - 5\gamma' + 6\gamma = e^{2x} \{4C_1 - 10C_1 + 6C_1\} + e^{3x} \{9C_2 - 15C_2 + 6C_2\};$$

$$\gamma'' - 5\gamma' + 6\gamma = e^{2x} \{10C_1 - 10C_1\} + e^{3x} \{15C_2 - 15C_2\};$$

$$\boxed{\gamma'' - 5\gamma' + 6\gamma = 0} \quad \therefore \boxed{\gamma = C_1 e^{2x} + C_2 e^{3x}} \text{ + AMBÉM é solução}$$