

$$\begin{aligned} &> \text{restart} \\ &> \text{Ecuacion} := \text{diff}(y(x), x\$2) - 5 \text{diff}(y(x), x) + 6 y(x) = 0 \\ &\quad \text{Ecuacion} := \frac{d^2}{dx^2} y(x) - 5 \left( \frac{d}{dx} y(x) \right) + 6 y(x) = 0 \end{aligned} \quad (1)$$

$$\begin{aligned} &> \text{EcuacionCaracteristica} := m \cdot 2 - 5 \cdot m + 6 = 0 \\ &\quad \text{EcuacionCaracteristica} := m^2 - 5 m + 6 = 0 \end{aligned} \quad (2)$$

$$\begin{aligned} &> \text{Raiz} := \text{solve}(\text{EcuacionCaracteristica}) \\ &\quad \text{Raiz} := 3, 2 \end{aligned} \quad (3)$$

$$\begin{aligned} &> \text{Sol}_1 := y(x) = \exp(\text{Raiz}_1 \cdot x); \text{Sol}_2 := y(x) = \exp(\text{Raiz}_2 \cdot x) \\ &\quad \text{Sol}_1 := y(x) = e^{3x} \\ &\quad \text{Sol}_2 := y(x) = e^{2x} \end{aligned} \quad (4)$$

$$\begin{aligned} &> \text{SolucionGeneral} := y(x) = C_1 \cdot \text{rhs}(\text{Sol}_1) + C_2 \cdot \text{rhs}(\text{Sol}_2) \\ &\quad \text{SolucionGeneral} := y(x) = C_1 e^{3x} + C_2 e^{2x} \end{aligned} \quad (5)$$

$$\begin{aligned} &> \text{comprobacion}_1 := \text{simplify}(\text{eval}(\text{subs}(y(x) = \text{rhs}(\text{SolucionGeneral}), \text{Ecuacion}))) \\ &\quad \text{comprobacion}_1 := 0 = 0 \end{aligned} \quad (6)$$

$$\begin{aligned} &> \text{comprobacion}_2 := \text{simplify}(\text{eval}(\text{subs}(y(x) = \text{rhs}(\text{Sol}_1), \text{Ecuacion}))) \\ &\quad \text{comprobacion}_2 := 0 = 0 \end{aligned} \quad (7)$$

$$\begin{aligned} &> \text{comprobacion}_3 := \text{simplify}(\text{eval}(\text{subs}(y(x) = \text{rhs}(\text{Sol}_2), \text{Ecuacion}))) \\ &\quad \text{comprobacion}_3 := 0 = 0 \end{aligned} \quad (8)$$

$$\begin{aligned} &> \text{SolGral} := \text{dsolve}(\text{Ecuacion}) \\ &\quad \text{SolGral} := y(x) = \_C1 e^{3x} + \_C2 e^{2x} \end{aligned} \quad (9)$$

$$\begin{aligned} &> \text{Sistema} := \text{diff}(\text{SolucionGeneral}, x), \text{diff}(\text{SolucionGeneral}, x\$2) : \text{Sistema}_1; \text{Sistema}_2; \\ &\quad \frac{d}{dx} y(x) = 3 C_1 e^{3x} + 2 C_2 e^{2x} \\ &\quad \frac{d^2}{dx^2} y(x) = 9 C_1 e^{3x} + 4 C_2 e^{2x} \end{aligned} \quad (10)$$

$$\begin{aligned} &> \text{Parametro} := \text{solve}(\{\text{Sistema}\}, \{C_1, C_2\}) : \text{Parametro}_1; \text{Parametro}_2; \\ &\quad C_1 = \frac{1}{3} \frac{\frac{d^2}{dx^2} y(x) - 2 \left( \frac{d}{dx} y(x) \right)}{e^{3x}} \\ &\quad C_2 = -\frac{1}{2} \frac{\frac{d^2}{dx^2} y(x) - 3 \left( \frac{d}{dx} y(x) \right)}{e^{2x}} \end{aligned} \quad (11)$$

$$\begin{aligned} &> \text{EcuacionIntermedia} := \text{simplify}(\text{subs}(C_1 = \text{rhs}(\text{Parametro}_1), C_2 = \text{rhs}(\text{Parametro}_2), \\ &\quad \text{SolucionGeneral})) \\ &\quad \text{EcuacionIntermedia} := y(x) = -\frac{1}{6} \frac{d^2}{dx^2} y(x) + \frac{5}{6} \frac{d}{dx} y(x) \end{aligned} \quad (12)$$

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EcuacionOriginal := lhs(EcuacionIntermedia) · 6 − rhs(EcuacionIntermedia) · 6 = 0

EcuacionOriginal :=  $\frac{d^2}{dx^2} y(x) - 5 \left( \frac{d}{dx} y(x) \right) + 6 y(x) = 0$

(13)