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> restart
> Ecua := y'' - 7·y' + 12·y = 0
      Ecua :=  $\frac{d^2}{dx^2} y(x) - 7 \frac{d}{dx} y(x) + 12 y(x) = 0$  (1)
> EcuaCarac := m2 - 7·m + 12 = 0
      EcuaCarac :=  $m^2 - 7 m + 12 = 0$  (2)
> Raiz := solve(EcuaCarac)
      Raiz := 4, 3 (3)
> yy[1] := exp(Raiz[1]·x); yy[2] := exp(Raiz[2]·x)
      yy1 := e4x
      yy2 := e3x (4)
> SolGral := y(x) = C[1]·yy[1] + C[2]·yy[2]
      SolGral :=  $y(x) = C_1 e^{4x} + C_2 e^{3x}$  (5)
> with(linalg) :
> WW := wronskian([yy[1], yy[2]], x)
      WW :=  $\begin{bmatrix} e^{4x} & e^{3x} \\ 4 e^{4x} & 3 e^{3x} \end{bmatrix}$  (6)
> Comprobar := det(WW) ≠ 0
      Comprobar :=  $-e^{4x} e^{3x} \neq 0$  (7)
> Ecua
       $\frac{d^2}{dx^2} y(x) - 7 \frac{d}{dx} y(x) + 12 y(x) = 0$  (8)
> comprobar := eval(subs(y(x) = rhs(SolGral), Ecua))
      comprobar := 0 = 0 (9)
> restart
> Ecua := y'' + 2·y' + 2·y = 0
      Ecua :=  $\frac{d^2}{dx^2} y(x) + 2 \frac{d}{dx} y(x) + 2 y(x) = 0$  (10)
> EcuaCarac := m2 + 2·m + 2 = 0
      EcuaCarac :=  $m^2 + 2 m + 2 = 0$  (11)
> Raiz := solve(EcuaCarac)
      Raiz := -1 + I, -1 - I (12)
> yy[1] := exp(Re(Raiz[1])·x)·cos(Im(Raiz[1])·x); yy[2] := exp(Re(Raiz[1])·x)
      ·sin(Im(Raiz[1])·x)
      yy1 := e-x cos(x)
      yy2 := e-x sin(x) (13)
> SolGral := y(x) = C[1]·yy[1] + C[2]·yy[2]

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$$SolGral := y(x) = C_1 e^{-x} \cos(x) + C_2 e^{-x} \sin(x) \quad (14)$$

> with(linalg) :

> WW := wronskian([yy[1], yy[2]], x)

$$WW := \begin{bmatrix} e^{-x} \cos(x) & e^{-x} \sin(x) \\ -e^{-x} \cos(x) - e^{-x} \sin(x) & -e^{-x} \sin(x) + e^{-x} \cos(x) \end{bmatrix} \quad (15)$$

> Comprobar := simplify(det(WW)) ≠ 0

$$Comprobar := e^{-2x} \neq 0 \quad (16)$$

> Ecua

$$\frac{d^2}{dx^2} y(x) + 2 \frac{d}{dx} y(x) + 2 y(x) = 0 \quad (17)$$

> ComprobarDos := simplify(eval(subs(y(x) = rhs(SolGral), Ecua)))

$$ComprobarDos := 0 = 0 \quad (18)$$

> restart

> Ecua := y'' - 6·y' + 9·y = 0

$$Ecua := \frac{d^2}{dx^2} y(x) - 6 \frac{d}{dx} y(x) + 9 y(x) = 0 \quad (19)$$

> EcuaCarac := m² - 6·m + 9 = 0

$$EcuaCarac := m^2 - 6m + 9 = 0 \quad (20)$$

> Raiz := solve(EcuaCarac)

$$Raiz := 3, 3 \quad (21)$$

> yy[1] := exp(Raiz[1]·x); yy[2] := x·exp(Raiz[1]·x)

$$yy_1 := e^{3x}$$

$$yy_2 := x e^{3x} \quad (22)$$

> with(linalg) :

> WW := wronskian([yy[1], yy[2]], x)

$$WW := \begin{bmatrix} e^{3x} & x e^{3x} \\ 3 e^{3x} & e^{3x} + 3 x e^{3x} \end{bmatrix} \quad (23)$$

> ComprobarUno := det(WW) ≠ 0

$$ComprobarUno := (e^{3x})^2 \neq 0 \quad (24)$$

> SolGral := y(x) = C[1]·yy[1] + C[2]·yy[2]

$$SolGral := y(x) = C_1 e^{3x} + C_2 x e^{3x} \quad (25)$$

> Ecua

$$\frac{d^2}{dx^2} y(x) - 6 \frac{d}{dx} y(x) + 9 y(x) = 0 \quad (26)$$

> ComprobarDos := simplify(eval(subs(y(x) = rhs(SolGral), Ecua)))

$$ComprobarDos := 0 = 0 \quad (27)$$

