> restart

> $Ecua := y'' - 4 \cdot y' + 4 \cdot y = 0$

$$Ecua := \frac{d^2}{dx^2}\, y(x) - 4\, \frac{d}{dx}\, y(x) + 4\, y(x) = 0 \tag{1}$$

> $EcuaCarac := m^2 - 4 \cdot m + 4 = 0$

$$EcuaCarac := m^2 - 4\, m + 4 = 0 \tag{2}$$

> $Para := solve(EcuaCarac)$

$$Para := 2, 2 \tag{3}$$

> $yy[1] := \exp(Para[1] \cdot x); yy[2] := x \cdot \exp(Para[1] \cdot x)$

$$yy_1 := e^{2x}$$

$$yy_2 := x\, e^{2x} \tag{4}$$

> $with(linalg):$

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

$$WW := \begin{bmatrix} e^{2x} & x\, e^{2x} \\ 2\, e^{2x} & e^{2x} + 2\, x\, e^{2x} \end{bmatrix} \tag{5}$$

> $ComprobarUno := det(WW) \neq 0$

$$ComprobarUno := \left(e^{2x}\right)^2 \neq 0 \tag{6}$$

> $ComprobarDos := simplify(eval(subs(y(x) = yy[1], Ecua)))$

$$ComprobarDos := 0 = 0 \tag{7}$$

> $ComprobarTres := simplify(eval(subs(y(x) = yy[2], Ecua)))$

$$ComprobarTres := 0 = 0 \tag{8}$$

> $SolGral := y(x) = \_C1 \cdot yy[1] + \_C2 \cdot yy[2]$

$$SolGral := y(x) = \_C1\, e^{2x} + \_C2\, x\, e^{2x} \tag{9}$$

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

$$ComprobarCuatro := 0 = 0 \tag{10}$$

> restart

> $Ecua := y'''' - 10 \cdot y''' + 37 \cdot y'' - 60 \cdot y' + 36\, y = 0$

$$Ecua := \frac{d^4}{dx^4}\, y(x) - 10\, \frac{d^3}{dx^3}\, y(x) + 37\, \frac{d^2}{dx^2}\, y(x) - 60\, \frac{d}{dx}\, y(x) + 36\, y(x) = 0 \tag{11}$$

> $SolaGral := dsolve(Ecua)$

$$SolaGral := y(x) = c_1\, e^{2x} + c_2\, e^{2x}\, x + c_3\, e^{3x} + c_4\, e^{3x}\, x \tag{12}$$

> restart

> $Ecua := y'''' + 32 \cdot y'' + 256\, y = 0$

$$Ecua := \frac{d^4}{dx^4}\, y(x) + 32\, \frac{d^2}{dx^2}\, y(x) + 256\, y(x) = 0 \tag{13}$$

> $SolGral := dsolve(Ecua)$

$$SolGral := y(x) = c_1 \sin(4x) + c_2 \cos(4x) + c_3 \sin(4x)\, x + c_4 \cos(4x)\, x \tag{14}$$

> *restart*

> *Ecua* := $y'' - 6 \cdot y' + 34\,y = 0$

$$Ecua := \frac{d^2}{dx^2}\,y(x) - 6\,\frac{d}{dx}\,y(x) + 34\,y(x) = 0 \tag{15}$$

> *SolGral* := *dsolve*(*Ecua*)

$$SolGral := y(x) = c_1\,e^{3x}\sin(5\,x) + c_2\,e^{3x}\cos(5\,x) \tag{16}$$

> *restart*

> *Ecua* := $y'' - 5 \cdot y' + 6 \cdot y = 6 \cdot \exp(-4 \cdot x)$

$$Ecua := \frac{d^2}{dx^2}\,y(x) - 5\,\frac{d}{dx}\,y(x) + 6\,y(x) = 6\,e^{-4x} \tag{17}$$

> *SolGralNoHom* := *dsolve*(*Ecua*)

$$SolGralNoHom := y(x) = e^{2x}\,c_2 + e^{3x}\,c_1 + \frac{e^{-4x}}{7} \tag{18}$$

>