> *restart*

> $SolGral := y(x) = \_C1 \cdot \exp(3\,x) + 4 \cdot x^2$

$$SolGral := y(x) = \_C1\ e^{3\,x} + 4\,x^2 \tag{1}$$

> $SolGralHom := y(x) = \_C1\ e^{3\,x}$

$$SolGralHom := y(x) = \_C1\ e^{3\,x} \tag{2}$$

> $SolGralPart := y(x) = 4\,x^2$

$$SolGralPart := y(x) = 4\,x^2 \tag{3}$$

> $EcuaHom := diff(y(x), x) - 3 \cdot y(x) = 0$

$$EcuaHom := \frac{d}{dx}\,y(x) - 3\,y(x) = 0 \tag{4}$$

> $Q := eval(subs(y(x) = rhs(SolGralPart), lhs(EcuaHom)))$

$$Q := -12\,x^2 + 8\,x \tag{5}$$

> $EcuaLinealNoHom := lhs(EcuaHom) = Q$

$$EcuaLinealNoHom := \frac{d}{dx}\,y(x) - 3\,y(x) = -12\,x^2 + 8\,x \tag{6}$$

> $SolGralFinal := dsolve(EcuaLinealNoHom)$

$$SolGralFinal := y(x) = c_1\ e^{3\,x} + 4\,x^2 \tag{7}$$

> *restart*

> $Ecua := y'' - 4 \cdot y' - 8 \cdot y = 0$

$$Ecua := \frac{d^2}{dx^2}\,y(x) - 4\,\frac{d}{dx}\,y(x) - 8\,y(x) = 0 \tag{8}$$

> $EcuaCarac := m^2 - 4 \cdot m - 8 = 0$

$$EcuaCarac := m^2 - 4\,m - 8 = 0 \tag{9}$$

> $Raiz := solve(EcuaCarac)$

$$Raiz := 2 + 2\sqrt{3},\ 2 - 2\sqrt{3} \tag{10}$$

> $SolUno := \exp(Raiz[1] \cdot x)$

$$SolUno := e^{(2 + 2\sqrt{3})\,x} \tag{11}$$

> $SolDos := \exp(Raiz[2] \cdot x)$

$$SolDos := e^{(2 - 2\sqrt{3})\,x} \tag{12}$$

> $with(linalg):$

> $WW := wronskian([SolUno, SolDos], x)$

$$WW := \begin{bmatrix} e^{(2 + 2\sqrt{3})\,x} & e^{(2 - 2\sqrt{3})\,x} \\ (2 + 2\sqrt{3})\ e^{(2 + 2\sqrt{3})\,x} & (2 - 2\sqrt{3})\ e^{(2 - 2\sqrt{3})\,x} \end{bmatrix} \tag{13}$$

> $Determinante := simplify(det(WW)) \neq 0$

$$Determinante := -4\sqrt{3}\ e^{4\,x} \neq 0 \tag{14}$$

> $SolGralFinal := y(x) = \_C1 \cdot SolUno + \_C2 \cdot SolDos$

$$SolGralFinal := y(x) = e^{(2 - 2\sqrt{3})\,x}\,\_C2 + e^{(2 + 2\sqrt{3})\,x}\,\_C1 \tag{15}$$

> $Comprobar := simplify(eval(subs(y(x) = rhs(SolGralFinal), lhs(Ecua) - rhs(Ecua) = 0)))$

$$Comprobar := 0 = 0 \tag{16}$$