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> restart
> Ecua := y'' - 2·y' + 2·y = 0
      Ecua :=  $\frac{d^2}{dx^2} y(x) - 2 \frac{d}{dx} y(x) + 2 y(x) = 0$  (1)
> EcuaAlg := m^2 - 2·m + 2 = 0
      EcuaAlg :=  $m^2 - 2 m + 2 = 0$  (2)
> Raiz := solve(EcuaAlg)
      Raiz := 1 + I, 1 - I (3)
> yy[1] := exp(Re(Raiz[1])·x)·cos(Im(Raiz[1])·x)
      yy1 := ex cos(x) (4)
> yy[2] := exp(Re(Raiz[1])·x)·sin(Im(Raiz[1])·x)
      yy2 := ex sin(x) (5)
> with(linalg) :
> WW := wronskian([yy[1], yy[2]], x)
      WW :=  $\begin{bmatrix} e^x \cos(x) & e^x \sin(x) \\ e^x \cos(x) - e^x \sin(x) & e^x \sin(x) + e^x \cos(x) \end{bmatrix}$  (6)
> Comprobacion := simplify(det(WW)) ≠ 0
      Comprobacion := e2x ≠ 0 (7)
> SolGral := y(x) = _C1·yy[1] + _C2·yy[2]
      SolGral := y(x) = _C1 ex cos(x) + _C2 ex sin(x) (8)
> ComprobarDos := simplify(eval(subs(y(x) = rhs(SolGral), Ecua)))
      ComprobarDos := 0 = 0 (9)
> restart
> SolGral := y(x) = _C1·exp(x)·cos(2 x) + _C2·exp(x)·sin(2 x) + _C3·x·exp(x)·cos(2 x)
+ _C4·x·exp(x)·sin(2 x)
      SolGral := y(x) = _C1 ex cos(2 x) + _C2 ex sin(2 x) + _C3 x ex cos(2 x) + _C4 x ex sin(2 x) (10)
> EcuaCarac := expand((m - 1 + 2·I)2·(m - 1 - 2·I)2) = 0
      EcuaCarac := m4 - 4 m3 + 14 m2 - 20 m + 25 = 0 (11)
> EcuaDif := y'''' - 4·y''' + 14·y'' - 20·y' + 25·y = 0
      EcuaDif :=  $\frac{d^4}{dx^4} y(x) - 4 \frac{d^3}{dx^3} y(x) + 14 \frac{d^2}{dx^2} y(x) - 20 \frac{d}{dx} y(x) + 25 y(x) = 0$  (12)
> SolGralFinal := dsolve(EcuaDif)
      SolGralFinal := y(x) = c1 ex sin(2 x) + c2 ex cos(2 x) + c3 ex sin(2 x) x + c4 ex cos(2 x) x (13)
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