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> restart
> Ecuacion := diff(z(x, y), x$2) - 5·diff(z(x, y), x, y) + 6·diff(z(x, y), y$2) = 0
      Ecuacion :=  $\frac{\partial^2}{\partial x^2} z(x, y) - 5 \left( \frac{\partial^2}{\partial y \partial x} z(x, y) \right) + 6 \left( \frac{\partial^2}{\partial y^2} z(x, y) \right) = 0$  (1)
=
> Solucion := pdsolve(Ecuacion)
      Solucion :=  $z(x, y) = \_F1(y + 2x) + \_F2(y + 3x)$  (2)
=
> Comporbacion1 := simplify(eval(subs(z(x, y) = rhs(Solucion), Ecuacion)))
      Comporbacion1 := 0 = 0 (3)
=
> SolucionParticular := z(x, y) = 4·exp(y + 3x) + 6·log(y + 2x)
      SolucionParticular :=  $z(x, y) = 4e^{y+3x} + 6\ln(y+2x)$  (4)
=
> Comporbacion2 := simplify(eval(subs(z(x, y) = rhs(SolucionParticular), Ecuacion)))
      Comporbacion2 := 0 = 0 (5)
=
> SolucionDos := z(x, y) = sin(y + 3x) + cos(y + 2x)
      SolucionDos :=  $z(x, y) = \sin(y + 3x) + \cos(y + 2x)$  (6)
=
> Comporbacion3 := simplify(eval(subs(z(x, y) = rhs(SolucionDos), Ecuacion)))
      Comporbacion3 := 0 = 0 (7)
=
> with(PDEtools);
[CanonicalCoordinates, ChangeSymmetry, CharacteristicQ, CharacteristicQInvariants,
ConservedCurrentTest, ConservedCurrents, ConsistencyTest, D_Dx, DeterminingPDE,
Eta_k, Euler, FromJet, InfinitesimalGenerator, Infinitesimals, IntegratingFactorTest,
IntegratingFactors, InvariantSolutions, InvariantTransformation, Invariants, Laplace,
Library, PDEplot, PolynomialSolutions, ReducedForm, SimilaritySolutions,
SimilarityTransformation, SymmetrySolutions, SymmetryTest, SymmetryTransformation,
TWSolutions, ToJet, build, casesplit, charstrip, dchange, dcoeffs, declare, diff_table,
difforder, dpolyform, dsubs, mapde, separability, splitstrip, splitsys, undeclare]
=
> restart
> Ecuacion := diff(y(x, t), t$2) + 4·diff(y(x, t), x, t) + 4·diff(y(x, t), x$2) = 0
      Ecuacion :=  $\frac{\partial^2}{\partial t^2} y(x, t) + 4 \left( \frac{\partial^2}{\partial x \partial t} y(x, t) \right) + 4 \left( \frac{\partial^2}{\partial x^2} y(x, t) \right) = 0$  (9)
=
> SolucionUno := pdsolve(Ecuacion)
      SolucionUno :=  $y(x, t) = \_F1(2t - x) + \_F2(2t - x)x$  (10)
=
> SolucionDos := y(x, t) = F1(2t - x) + F2(2t - x)·t
      SolucionDos :=  $y(x, t) = F_1(2t - x) + F_2(2t - x)t$  (11)
=
> Comprobacion1 := simplify(eval(subs(y(x, t) = rhs(SolucionUno), Ecuacion)))
      Comprobacion1 := 0 = 0 (12)
=
> Comprobacion2 := simplify(eval(subs(y(x, t) = rhs(SolucionDos), Ecuacion)))
      Comprobacion2 := 0 = 0 (13)
>

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