

> restart

> SolucionGeneral := y(x) = C₁·exp(2 x) + C₂·exp(3 x)

$$\text{SolucionGeneral} := y(x) = C_1 e^{2x} + C_2 e^{3x} \quad (1)$$

> Sistema := diff(SolucionGeneral, x), diff(SolucionGeneral, x\$2) : Sistema₁; Sistema₂

$$\frac{d}{dx} y(x) = 2 C_1 e^{2x} + 3 C_2 e^{3x}$$

$$\frac{d^2}{dx^2} y(x) = 4 C_1 e^{2x} + 9 C_2 e^{3x} \quad (2)$$

> with(linalg)

[BlockDiagonal, GramSchmidt, JordanBlock, LUdecomp, QRdecomp, Wronskian, addcol, addrow, adj, adjoint, angle, augment, backsub, band, basis, bezout, blockmatrix, charmat, charpoly, cholesky, col, coldim, colspace, colspan, companion, concat, cond, copyinto, crossprod, curl, definite, delcols, delrows, det, diag, diverge, dotprod, eigenvals, eigenvalues, eigenvectors, eigenvects, entermatrix, equal, exponential, extend, ffgausselim, fibonacci, forwardsub, frobenius, gausselim, gaussjordan, geneqns, genmatrix, grad, hadamard, hermite, hessian, hilbert, htranspose, ihermite, indexfunc, innerprod, intbasis, inverse, ismith, issimilar, iszero, jacobian, jordan, kernel, laplacian, leastsqrs, linsolve, matadd, matrix, minor, minpoly, mulcol, mulrow, multiply, norm, normalize, nullspace, orthog, permanent, pivot, potential, randmatrix, randvector, rank, ratform, row, rowdim, rowspace, rowspan, rref, scalarmul, singularvals, smith, stackmatrix, submatrix, subvector, sumbasis, swapcol, swaprow, sylvestor, toeplitz, trace, transpose, vandermonde, vecpotent, vectdim, vector, wronskian] (3)

> Parametro := solve({Sistema}, {C₁, C₂}) : Parametro₁; Parametro₂

$$C_1 = \frac{1}{2} \frac{-\left(\frac{d^2}{dx^2} y(x)\right) + 3 \left(\frac{d}{dx} y(x)\right)}{e^{2x}}$$

$$C_2 = -\frac{1}{3} \frac{-\left(\frac{d^2}{dx^2} y(x)\right) + 2 \left(\frac{d}{dx} y(x)\right)}{e^{3x}} \quad (4)$$

> EcuacionIntermedia := subs(C₁ = rhs(Parametro₁), C₂ = rhs(Parametro₂), SolucionGeneral)

$$\text{EcuacionIntermedia} := y(x) = -\frac{1}{6} \frac{d^2}{dx^2} y(x) + \frac{5}{6} \frac{d}{dx} y(x) \quad (5)$$

> EcuacionFinal := lhs(EcuacionIntermedia)·6 - rhs(EcuacionIntermedia)·6 = 0

$$\text{EcuacionFinal} := 6 y(x) + \frac{d^2}{dx^2} y(x) - 5 \left(\frac{d}{dx} y(x)\right) = 0 \quad (6)$$

> Comprobacion := eval(subs(y(x) = rhs(SolucionGeneral), EcuacionFinal))

$$\text{Comprobacion} := 0 = 0 \quad (7)$$

> Solucion := dsolve(EcuacionFinal)

$$\text{Solucion} := y(x) = _C1 e^{2x} + _C2 e^{3x} \quad (8)$$

|> SolucionGeneral;
|=
|>

$$y(x) = C_1 e^{2x} + C_2 e^{3x}$$

(9)