```
> restart
> Ecuacion := x^4*log(x) - 2*x*y(x)^3 + 3*x^2*y(x)^2*y'(x) = 0
```

$$Ecuacion := x^4 \ln(x) - 2\,x\,y(x)^3 + 3\,x^2\,y(x)^2 \left(\frac{d}{dx} y(x) \right) = 0 \quad (1)$$

```
> with(DEtools)
```

[*AreSimilar, DEnormal, DEplot, DEplot3d, DEplot_polygon, DFactor, DFactorLCLM, DFactorsols, Dchangevar, FunctionDecomposition, GCRD, Gosper, Heunsols, Homomorphisms, IVPsol, IsHyperexponential, LCLM, MeijerGsols, MultiplicativeDecomposition, ODEInvariants, PDEchangecoords, PolynomialNormalForm, RationalCanonicalForm, ReduceHyperexp, RiemannPsols, Xchange, Xcommutator, Xgauge, Zeilberger, abelsol, adjoint, autonomous, bernoullisol, buildsol, buildsym, canoni, caseplot, casesplit, checkrank, chinisol, clairautsol, constcoeffsols, convertAlg, convertsys, dalembertsol, dcoeffs, de2diffop, dfieldplot, diff_table, diffop2de, dperiodic_sols, dpolyform, dsubs, eigenring, endomorphism_charpoly, equinv, eta_k, eulersols, exactsol, expsols, exterior_power, firint, firtest, formal_sol, gen_exp, generate_ic, genhomosol, gensys, hamilton_eqs, hypergeomsols, hyperode, indicialeq, infgen, initialdata, integrate_sols, intfactor, invariants, kovacicsols, leftdivision, liesol, line_int, linearsol, matrixDE, matrix_riccati, maxdimsystems, moser_reduce, muchange, mult, mutest, newton_polygon, normalG2, ode_int_y, ode_y1, odeadvisor, odepde, parametricsol, particularsol, phaseportrait, poincare, polysols, power_equivalent, rational_equivalent, ratsols, redode, reduceOrder, reduce_order, regular_parts, regularsp, remove_RootOf, riccati_system, riccatisol, rifread, rifsimp, rightdivision, rtaylor, separablesol, singularities, solve_group, super_reduce, symgen, symmetric_power, symmetric_product, symtest, transinv, translate, untranslate, varparam, zoom*] **(2)**

```
> odeadvisor(Ecuacion)
```

[*_Bernoulli*] **(3)**

```
> FactInt := intfactor(Ecuacion)
```

$$FactInt := \frac{1}{x^4} \quad (4)$$

```
> M := x^4*log(x) - 2*x*y^3
```

$$M := x^4 \ln(x) - 2\,x\,y^3 \quad (5)$$

```
> N := 3*x^2*y^2
```

$$N := 3\,y^2\,x^2 \quad (6)$$

```
> MM := expand(FactInt*M); NN := FactInt*N
```

$$MM := \ln(x) - \frac{2\,y^3}{x^3}$$

$$NN := \frac{3\,y^2}{x^2} \quad (7)$$

```
> Comprobacion := diff(MM, y) - diff(NN, x) = 0
```

$$Comprobacion := 0 = 0 \quad (8)$$

> $EcuacionDos := \ln(x) - \frac{2\,y(x)^3}{x^3} + \frac{3\,y(x)^2}{x^2} \cdot diff(y(x), x) = 0$

$$EcuacionDos := \ln(x) - \frac{2\,y(x)^3}{x^3} + \frac{3\,y(x)^2 \left(\frac{d}{dx} y(x) \right)}{x^2} = 0 \quad (9)$$

> $odeadvisor(EcuacionDos)$

$$[\_exact, \_Bernoulli] \quad (10)$$

> $IntMMx := int(MM, x)$

$$IntMMx := x \ln(x) - x + \frac{y^3}{x^2} \quad (11)$$

> $SolucionGeneral := IntMMx + int((NN - diff(IntMMx, y)), y) = C_1$

$$SolucionGeneral := x \ln(x) - x + \frac{y^3}{x^2} = C_1 \quad (12)$$

> $SolCero := isolate(SolucionGeneral, y\cdot\cdot 3)$

$$SolCero := y^3 = \left(C_1 - x \ln(x) + x\right) x^2 \quad (13)$$

> $restart$

> $Ecuacion := 3\cdot\exp(x)\cdot\tan(y) + (2 - \exp(x))\cdot\sec(y)\cdot\cdot 2\cdot y' = 0$

$$Ecuacion := 3\,e^x \tan(y(x)) + \left(2 - e^x\right) \sec(y(x))^2 \left(\frac{d}{dx} y(x) \right) = 0 \quad (14)$$

> $with(DEtools)$:

> $odeadvisor(Ecuacion)$

$$[\_separable] \quad (15)$$

> $M := 3\cdot\exp(x)\cdot\tan(y); N := (2 - \exp(x))\cdot\sec(y)\cdot\cdot 2;$

$$M := 3\,e^x \tan(y)$$

$$N := \left(2 - e^x\right) \sec(y)^2 \quad (16)$$

> $P := 3\cdot\exp(x); Q := \tan(y); R := (2 - \exp(x)); S := \sec(y)\cdot\cdot 2$

$$P := 3\,e^x$$

$$Q := \tan(y)$$

$$R := 2 - e^x$$

$$S := \sec(y)^2 \quad (17)$$

> $SolucionGeneral := int\left(\frac{P}{R}, x\right) + int\left(\frac{S}{Q}, y\right) = \log(C_1)$

$$SolucionGeneral := -3 \ln\left(2 - e^x\right) + \ln(\tan(y)) = \ln(C_1) \quad (18)$$

> $Solucion := isolate(SolucionGeneral, y)$

$$Solucion := y = -\arctan\left(-8\,C_1 + 12\,C_1\,e^x - 6\,C_1\left(e^x\right)^2 + C_1\left(e^x\right)^3\right) \quad (19)$$

> $restart$