> restart
>

83. $(y^2 + xy^2)\, y' + x^2 - yx^2 = 0.$

> Ecuacion := $(y(x)\cdot\cdot 2 + x\cdot y(x)\cdot\cdot 2)\cdot diff\,(y(x), x) + x\cdot\cdot 2 - y(x)\cdot x\cdot\cdot 2 = 0$

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

> with(DEtools) :
> odeadvisor(Ecuacion)

$$[\_separable] \qquad (2)$$

> M := $x\cdot\cdot 2 - y\cdot x\cdot\cdot 2$

$$M := x^2 - y\,x^2 \qquad (3)$$

> N := $y\cdot\cdot 2 + x\cdot y\cdot\cdot 2$

$$N := y^2 + x\,y^2 \qquad (4)$$

> factor(M)

$$-x^2\,(-1 + y) \qquad (5)$$

> factor(N)

$$y^2\,(1 + x) \qquad (6)$$

> P := $x\cdot\cdot 2$

$$P := x^2 \qquad (7)$$

> Q := $1 - y$

$$Q := 1 - y \qquad (8)$$

> R := $1 + x$

$$R := 1 + x \qquad (9)$$

> S := $y\cdot\cdot 2$

$$S := y^2 \qquad (10)$$

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

$$SolucionGeneral := \frac{1}{2}\,x^2 - x + \ln(1 + x) - \frac{1}{2}\,y^2 - y - \ln(-1 + y) = C_1 \qquad (11)$$

>