> restart

> $Ecua := y' + 2 \cdot x \cdot y = 2 \cdot x \cdot \exp(-x^2)$

$$Ecua := \frac{d}{dx} y(x) + 2\,x\,y(x) = 2\,x\,e^{-x^2} \quad (1)$$

> $p := 2 \cdot x$

$$p := 2\,x \quad (2)$$

> $q := rhs(Ecua)$

$$q := 2\,x\,e^{-x^2} \quad (3)$$

> $IntPx := int(p, x)$

$$IntPx := x^2 \quad (4)$$

> $IntPositiva := \exp(IntPx)$

$$IntPositiva := e^{x^2} \quad (5)$$

> $IntNegativa := \exp(-IntPx)$

$$IntNegativa := e^{-x^2} \quad (6)$$

> $IntQx := int(IntPositiva \cdot q, x)$

$$IntQx := x^2 \quad (7)$$

> $SolGral := y(x) = \_C1 \cdot IntNegativa + IntNegativa \cdot IntQx$

$$SolGral := y(x) = \_C1\,e^{-x^2} + x^2\,e^{-x^2} \quad (8)$$

> $SolGraComp := dsolve(Ecua)$

$$SolGraComp := y(x) = (x^2 + \_C1)\,e^{-x^2} \quad (9)$$

> restart

> $EcuaOriginal := diff(y(x), x) = \frac{1}{(x \cdot \cos(y(x)) + \sin(2 \cdot y(x)))}$

$$EcuaOriginal := \frac{d}{dx} y(x) = \frac{1}{x\cos(y(x)) + \sin(2\,y(x))} \quad (10)$$

> $with(DEtools)$:

> $intfactor(EcuaOriginal)$

$$\frac{\cos(y(x))\,(2\sin(y(x)) + x)}{x + 2 + 2\sin(y(x))} \quad (11)$$

> $Ecuacion := diff(x(y), y) = x(y) \cdot \cos(y) + \sin(2 \cdot y)$

$$Ecuacion := \frac{d}{dy} x(y) = x(y)\cos(y) + \sin(2\,y) \quad (12)$$

> $p := -\cos(y)$

$$p := -\cos(y) \quad (13)$$

> $q := \sin(2\,y)$

$$q := \sin(2\,y) \quad (14)$$

> $IntPos := int(p, y)$

$$IntPos := -\sin(y) \quad (15)$$

> $IntNeg := -int(p, y)$

$$IntNeg := \sin(y) \quad (16)$$

> $SolGral := x(y) = expand(\_C1 \cdot \exp(IntNeg) + \exp(IntNeg) \cdot int(\exp(IntPos) \cdot q, y))$

(17)

$$SolGral := x(y) = \_C1\, e^{\sin(y)} - 2\sin(y) - 2 \quad (17)$$

> $Comprobar := dsolve(Ecuacion)$

$$Comprobar := x(y) = \_C1\, e^{\sin(y)} - 2\sin(y) - 2 \quad (18)$$

> $restart$

> $Ecuacion := diff(y(x), x) - \frac{y(x)}{x \cdot \log(x)} = 3 \cdot x^2 - \frac{x^2}{\log(x)}$

$$Ecuacion := \frac{d}{dx} y(x) - \frac{y(x)}{x \ln(x)} = 3x^2 - \frac{x^2}{\ln(x)} \quad (19)$$

> $p := -\frac{1}{x \cdot \log(x)}$

$$p := -\frac{1}{x \ln(x)} \quad (20)$$

> $q := rhs(Ecuacion)$

$$q := 3x^2 - \frac{x^2}{\ln(x)} \quad (21)$$

> $IntNeg := -int(p, x)$

$$IntNeg := \ln(\ln(x)) \quad (22)$$

> $IntPos := int(p, x)$

$$IntPos := -\ln(\ln(x)) \quad (23)$$

> $SolGral := y(x) = \_C1 \cdot \exp(IntNeg) + \exp(IntNeg) \cdot int(\exp(IntPos) \cdot q, x)$

$$SolGral := y(x) = \_C1 \ln(x) + x^3 \quad (24)$$

> $comprobar := dsolve(Ecuacion)$

$$comprobar := y(x) = \_C1 \ln(x) + x^3 \quad (25)$$

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