

> restart

> IntegralNueva := Int(log(x), x) = int(log(x), x) + k<sub>1</sub>

$$\text{IntegralNueva} := \int \ln(x) \, dx = x \ln(x) - x + k_1 \quad (1)$$

> IntegralDefinida := Int(log(x), x = 1 .. 2) = evalf(int(log(x), x = 1 .. 2), 4)

$$\text{IntegralDefinida} := \int_1^2 \ln(x) \, dx = 0.386 \quad (2)$$

> restart

> EcuacionOriginal := x·diff(y(x), x) + y(x) = log(x);

$$\text{EcuacionOriginal} := x \left( \frac{d}{dx} y(x) \right) + y(x) = \ln(x) \quad (3)$$

> EcuacionNorm := expand( $\frac{\text{lhs}(\text{EcuacionOriginal})}{x}$ ) =  $\frac{\text{rhs}(\text{EcuacionOriginal})}{x}$

$$\text{EcuacionNorm} := \frac{d}{dx} y(x) + \frac{y(x)}{x} = \frac{\ln(x)}{x} \quad (4)$$

> p(x) :=  $\frac{1}{x}$ ; q(x) := rhs(EcuacionNorm);

$$p(x) := \frac{1}{x}$$

$$q(x) := \frac{\ln(x)}{x} \quad (5)$$

> SolucionGeneral := y(x) = C1·exp(-int(p(x), x)) + expand(exp(-int(p(x), x)) · int(exp(int(p(x), x)) · q(x), x))

$$\text{SolucionGeneral} := y(x) = \frac{C1}{x} + \ln(x) - 1 \quad (6)$$

> SolGral := dsolve(EcuacionOriginal)

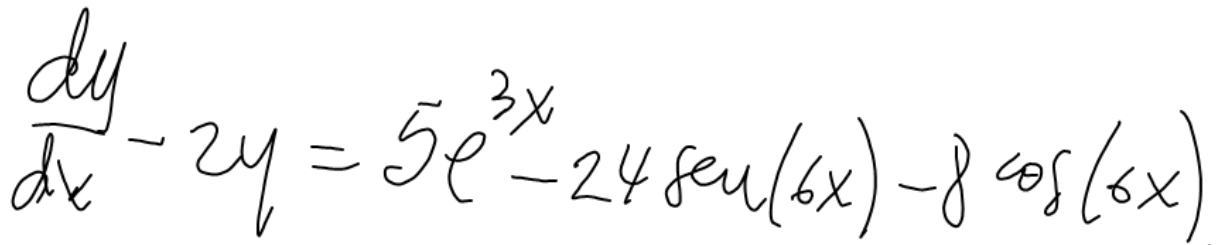
$$\text{SolGral} := y(x) = \ln(x) - 1 + \frac{C1}{x} \quad (7)$$

> comprobacion<sub>1</sub> := simplify(eval(subs(y(x) = rhs(SolucionGeneral), lhs(EcuacionOriginal) - rhs(EcuacionOriginal) = 0)))

$$\text{comprobacion}_1 := 0 = 0 \quad (8)$$

> restart

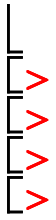
>


$$\frac{dy}{dx} - 2y = 5e^{3x} - 24\sin(6x) - 8\cos(6x)$$

> Ecuacion := diff(y(x), x) - 2·y(x) = 5·exp(3 x) - 24·sin(6 x) - 8·cos(6 x)

$$\text{Ecuacion} := \frac{d}{dx} y(x) - 2 y(x) = 5 e^{3x} - 24 \sin(6x) - 8 \cos(6x) \quad (9)$$

> SolucionGeneral := dsolve(Ecuacion)



$$SolucionGeneral := y(x) = 5 e^{3x} + 4 \cos(6x) + e^{2x} \_C1$$

**(10)**