

$$\begin{aligned}
& \text{restart} \\
& \text{Ecua} := 2 \cdot x \cdot y' - y = 0 \\
& \text{Ecua} := 2 x \left(\frac{d}{dx} y(x) \right) - y(x) = 0 \quad (1) \\
& \text{EcuaDos} := \text{expand} \left(\frac{\text{lhs}(\text{Ecua})}{2 \cdot x} \right) = 0 \\
& \text{EcuaDos} := \frac{d}{dx} y(x) - \frac{y(x)}{2 x} = 0 \quad (2) \\
& p := -\frac{1}{2 x} \\
& p := -\frac{1}{2 x} \quad (3) \\
& \text{IntPx} := \text{int}(p, x) \\
& \text{IntPx} := -\frac{\ln(x)}{2} \quad (4) \\
& \text{SolGral} := y(x) = C[1] \cdot \exp(-\text{IntPx}) \\
& \text{SolGral} := y(x) = C_1 \sqrt{x} \quad (5) \\
& \text{restart} \\
& \text{Ecua} := 2 \cdot x \cdot y' - y = 3 x^2 \\
& \text{Ecua} := 2 x \left(\frac{d}{dx} y(x) \right) - y(x) = 3 x^2 \quad (6) \\
& \text{EcuaDos} := \text{expand} \left(\frac{\text{lhs}(\text{Ecua})}{2 \cdot x} \right) = \frac{\text{rhs}(\text{Ecua})}{2 \cdot x} \\
& \text{EcuaDos} := \frac{d}{dx} y(x) - \frac{y(x)}{2 x} = \frac{3 x}{2} \quad (7) \\
& p := -\frac{1}{2 x}; q := \frac{3 \cdot x}{2} \\
& p := -\frac{1}{2 x} \\
& q := \frac{3 x}{2} \quad (8) \\
& \text{IntPx} := \text{int}(p, x) \\
& \text{IntPx} := -\frac{\ln(x)}{2} \quad (9) \\
& \text{IntPxNeg} := -\text{int}(p, x) \\
& \text{IntPxNeg} := \frac{\ln(x)}{2} \quad (10) \\
& \text{SolGral} := y(x) = C[1] \cdot \exp(\text{IntPxNeg}) + \exp(\text{IntPxNeg}) \cdot \text{int}(\exp(\text{IntPx}) \cdot q, x) \\
& \text{SolGral} := y(x) = C_1 \sqrt{x} + x^2 \quad (11) \\
& \text{DerSolGral} := \text{diff}(\text{SolGral}, x)
\end{aligned}$$

$$DerSolGral := \frac{d}{dx} y(x) = \frac{C_1}{2\sqrt{x}} + 2x \quad (12)$$

> Ecua

$$2x \left(\frac{d}{dx} y(x) \right) - y(x) = 3x^2 \quad (13)$$

> DerEcua := isolate(Ecua, diff(y(x), x))

$$DerEcua := \frac{d}{dx} y(x) = \frac{3x^2 + y(x)}{2x} \quad (14)$$

> DerEcuaDos := expand(lhs(DerEcua) = subs(y(x) = rhs(SolGral), rhs(DerEcua)))

$$DerEcuaDos := \frac{d}{dx} y(x) = \frac{C_1}{2\sqrt{x}} + 2x \quad (15)$$

> SolFinal := dsolve(Ecua)

$$SolFinal := y(x) = x^2 + \sqrt{x} c_1 \quad (16)$$

> restart

> Ecua := y' + y*cos(x) = sin(x)*cos(x)

$$Ecua := \frac{d}{dx} y(x) + y(x) \cos(x) = \sin(x) \cos(x) \quad (17)$$

> p := cos(x)

$$p := \cos(x) \quad (18)$$

> q := sin(x)*cos(x)

$$q := \sin(x) \cos(x) \quad (19)$$

> IntPx := int(p, x)

$$IntPx := \sin(x) \quad (20)$$

> IntPxNeg := -int(p, x)

$$IntPxNeg := -\sin(x) \quad (21)$$

> SolGral := y(x) = expand(C[1]*exp(IntPxNeg) + exp(IntPxNeg)*int(exp(IntPx)*q, x))

$$SolGral := y(x) = \frac{C_1}{e^{\sin(x)}} + \sin(x) - 1 \quad (22)$$

> Ecua

$$\frac{d}{dx} y(x) + y(x) \cos(x) = \sin(x) \cos(x) \quad (23)$$

> Comprobar := simplify(eval(subs(y(x) = rhs(SolGral), lhs(Ecua) - rhs(Ecua) = 0)))

$$Comprobar := 0 = 0 \quad (24)$$

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