```
> restart
> Ecua := y"+ 6 y'+ 9 y = 8·exp(−3 x) − 6·cos(2 x)
```

$$Ecua := \frac{d^2}{dx^2} y(x) + 6 \frac{d}{dx} y(x) + 9 y(x) = 8 e^{-3x} - 6 \cos(2x) \quad (1)$$

```
> SolaGral := dsolve(Ecua)
```

$$SolaGral := y(x) = e^{-3x} c_2 + e^{-3x} x c_1 + 4 e^{-3x} x^2 - \frac{30 \cos(2x)}{169} - \frac{72 \sin(2x)}{169} \quad (2)$$

```
> restart
> Ecua := y"+ 6 y'+ 9 y = 8·exp(−3 x) − 6·cos(2 x)
```

$$Ecua := \frac{d^2}{dx^2} y(x) + 6 \frac{d}{dx} y(x) + 9 y(x) = 8 e^{-3x} - 6 \cos(2x) \quad (3)$$

```
> EcuaHom := lhs(Ecua) = 0
```

$$EcuaHom := \frac{d^2}{dx^2} y(x) + 6 \frac{d}{dx} y(x) + 9 y(x) = 0 \quad (4)$$

```
> Q := rhs(Ecua)
```

$$Q := 8 e^{-3x} - 6 \cos(2x) \quad (5)$$

```
> EcuaCarac := m^2 + 6 m + 9 = 0
```

$$EcuaCarac := m^2 + 6 m + 9 = 0 \quad (6)$$

```
> Raiz := solve(EcuaCarac)
```

$$Raiz := -3, -3 \quad (7)$$

```
> yy[1] := exp(Raiz[1]·x); yy[2] := x·exp(Raiz[1]·x)
```

$$yy_1 := e^{-3x}$$

$$yy_2 := x e^{-3x} \quad (8)$$

```
> SolGralHom := y(x) = _C1·yy[1] + _C2·yy[2]
```

$$SolGralHom := y(x) = \_C1\, e^{-3x} + \_C2\, x e^{-3x} \quad (9)$$

```
> SolGralNoHom := y(x) = A·yy[1] + B·yy[2]
```

$$SolGralNoHom := y(x) = A e^{-3x} + B x e^{-3x} \quad (10)$$

```
> with(linalg) :
> WW := wronskian([yy[1], yy[2]], x)
```

$$WW := \begin{bmatrix} e^{-3x} & x e^{-3x} \\ -3 e^{-3x} & e^{-3x} - 3 x e^{-3x} \end{bmatrix} \quad (11)$$

```
> BB := array([0, Q])
```

$$BB := \begin{bmatrix} 0 & 8 e^{-3x} - 6 \cos(2x) \end{bmatrix} \quad (12)$$

```
> Parametro := simplify(linsolve(WW, BB))
```

$$Parametro := \begin{bmatrix} 6 x e^{3x} \cos(2x) - 8 x & -6 \cos(2x) e^{3x} + 8 \end{bmatrix} \quad (13)$$

```
> Aprima := Parametro[1]
```

$$Aprima := 6 x e^{3x} \cos(2x) - 8 x \quad (14)$$

> $Bprima := Parametro[2]$

$$Bprima := -6\cos(2x)\,e^{3x} + 8 \quad \textbf{(15)}$$

> $A := int(Aprima, x) + \_C1$

$$A := -4x^2 + 6\left(\frac{3x}{13} - \frac{5}{169}\right)e^{3x}\cos(2x) - 6\left(-\frac{2x}{13} + \frac{12}{169}\right)e^{3x}\sin(2x) + \_C1 \quad \textbf{(16)}$$

> $B := int(Bprima, x) + \_C2$

$$B := 8x - \frac{18\cos(2x)\,e^{3x}}{13} - \frac{12\sin(2x)\,e^{3x}}{13} + \_C2 \quad \textbf{(17)}$$

> $SolGralNoHomFinal := simplify(SolGralNoHom)$

$$SolGralNoHomFinal := y(x) = e^{-3x}\left(x\,\_C2 + 4x^2 + \_C1\right) - \frac{30\cos(2x)}{169} - \frac{72\sin(2x)}{169} \quad \textbf{(18)}$$

> $restart$

>