```
> restart
> SolGral := y(x) = C[1]·exp(2 x)·cos(3 x) + C[2]·exp(2 x)·sin(3 x) + 5·exp(5 x)
```

$$SolGral := y(x) = C_1 e^{2x}\cos(3x) + C_2 e^{2x}\sin(3x) + 5 e^{5x} \quad (1)$$

```
> DerSol := diff(SolGral, x)
```

$$DerSol := \frac{d}{dx} y(x) = 2 C_1 e^{2x}\cos(3x) - 3 C_1 e^{2x}\sin(3x) + 2 C_2 e^{2x}\sin(3x) + 3 C_2 e^{2x}\cos(3x) + 25 e^{5x} \quad (2)$$

```
> DerSegSol := diff(DerSol, x)
```

$$DerSegSol := \frac{d^2}{dx^2} y(x) = -5 C_1 e^{2x}\cos(3x) - 12 C_1 e^{2x}\sin(3x) - 5 C_2 e^{2x}\sin(3x) + 12 C_2 e^{2x}\cos(3x) + 125 e^{5x} \quad (3)$$

```
> Raiz := solve({DerSol, DerSegSol}, {C[1], C[2]}) :
> Raiz[1]
```

$$C_1 = -\frac{1}{39}\,\frac{1}{e^{2x}\left(\sin(3x)^2+\cos(3x)^2\right)}\left(3\left(\frac{d^2}{dx^2} y(x)\right)\cos(3x) - 75 e^{5x}\cos(3x) - 12\cos(3x)\left(\frac{d}{dx} y(x)\right) + 2\left(\frac{d^2}{dx^2} y(x)\right)\sin(3x) - 375 e^{5x}\sin(3x) + 5\sin(3x)\left(\frac{d}{dx} y(x)\right)\right) \quad (4)$$

```
> Raiz[2]
```

$$C_2 = \frac{1}{39}\,\frac{1}{e^{2x}\left(\sin(3x)^2+\cos(3x)^2\right)}\left(-3\left(\frac{d^2}{dx^2} y(x)\right)\sin(3x) + 2\left(\frac{d^2}{dx^2} y(x)\right)\cos(3x) + 75 e^{5x}\sin(3x) - 375 e^{5x}\cos(3x) + 12\sin(3x)\left(\frac{d}{dx} y(x)\right) + 5\cos(3x)\left(\frac{d}{dx} y(x)\right)\right) \quad (5)$$

```
> Ecua := isolate(simplify(subs(C[1] = rhs(Raiz[1]), C[2] = rhs(Raiz[2]), SolGral)),
    diff(y(x), x$2))
```

$$Ecua := \frac{d^2}{dx^2} y(x) = -13 y(x) + 90 e^{5x} + 4\left(\frac{d}{dx} y(x)\right) \quad (6)$$

```
> EcuaOriginal := lhs(Ecua) - (-13 y(x) + 4 (d/dx y(x))) = rhs(Ecua) - (-13 y(x)
    + 4 (d/dx y(x)))
```

$$EcuaOriginal := \frac{d^2}{dx^2} y(x) + 13 y(x) - 4\left(\frac{d}{dx} y(x)\right) = 90 e^{5x} \quad (7)$$

```
> SolGral
```

$$y(x) = C_1 e^{2x}\cos(3x) + C_2 e^{2x}\sin(3x) + 5 e^{5x} \quad (8)$$

```
> Comprobacion := eval(subs(y(x) = rhs(SolGral), lhs(EcuaOriginal)) - rhs(EcuaOriginal)
      = 0)
```

$$Comprobacion := 0 = 0 \tag{9}$$

```
>
```