```
> restart
> Solucion := y(x) = C_1·exp(2·x)·cos(3·x) + C_2·exp(2·x)·sin(3·x)
```

$$Solucion := y(x) = C_1\, e^{2x} \cos(3x) + C_2\, e^{2x} \sin(3x) \tag{1}$$

```
> Sistema := diff(Solucion, x), diff(Solucion, x$2) : Sistema_1; Sistema_2;
```

$$\frac{d}{dx} y(x) = 2\, C_1\, e^{2x} \cos(3x) - 3\, C_1\, e^{2x} \sin(3x) + 2\, C_2\, e^{2x} \sin(3x) + 3\, C_2\, e^{2x} \cos(3x)$$

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

```
> Parametro := solve( {Sistema}, {C_1, C_2} ) : Parametro_1; Parametro_2;
```

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

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

```
> EcuacionInicial := simplify( subs(C_1 = rhs(Parametro_1), C_2 = rhs(Parametro_2), Solucion) )
```

$$EcuacionInicial := y(x) = -\frac{1}{13}\frac{d^2}{dx^2} y(x) + \frac{4}{13}\frac{d}{dx} y(x) \tag{4}$$

```
> EcuacionFinal := lhs(EcuacionInicial)·13 − rhs(EcuacionInicial)·13 = 0
```

$$EcuacionFinal := 13\, y(x) + \frac{d^2}{dx^2} y(x) - 4\left(\frac{d}{dx} y(x)\right) = 0 \tag{5}$$

```
> SolucionGeneral := dsolve(EcuacionFinal)
```

$$SolucionGeneral := y(x) = \_C1\, e^{2x} \sin(3x) + \_C2\, e^{2x} \cos(3x) \tag{6}$$

```
>
>
>
>
```