```
> restart
> Ecua := y''+4*y'-5*y=0
```

$$Ecua := \frac{d^2}{dx^2} y(x) + 4\left(\frac{d}{dx} y(x)\right) - 5\,y(x) = 0 \quad (1)$$

```
> EcuaCarac := m^2+4*m-5=0
```

$$EcuaCarac := m^2 + 4\,m - 5 = 0 \quad (2)$$

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

$$Raiz := 1, -5 \quad (3)$$

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

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

$$yy_2 := e^{-5x} \quad (4)$$

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

$$SolGral := y(x) = \_C1\, e^{x} + \_C2\, e^{-5x} \quad (5)$$

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

$$WW := \begin{bmatrix} e^{x} & e^{-5x} \\ e^{x} & -5\,e^{-5x} \end{bmatrix} \quad (6)$$

```
> comprobacion := det(WW) <> 0
```

$$comprobacion := -6\,e^{x}\,e^{-5x} \neq 0 \quad (7)$$

```
> ComprobacionDos := eval(subs(y(x)=rhs(SolGral), Ecua))
```

$$ComprobacionDos := 0 = 0 \quad (8)$$

```
> restart
> EcuaCarac := (m-(2+3*I))^2*(m-(2-3*I))^2=0
```

$$EcuaCarac := (m - 2 - 3\,I)^2\,(m - 2 + 3\,I)^2 = 0 \quad (9)$$

```
> EcuaDos := expand(EcuaCarac)
```

$$EcuaDos := m^4 - 8\,m^3 + 42\,m^2 - 104\,m + 169 = 0 \quad (10)$$

```
> EcuaEcua := y''''-8*y'''+42*y''-104*y'+169*y=0
```

$$EcuaEcua := \frac{d^4}{dx^4} y(x) - 8\left(\frac{d^3}{dx^3} y(x)\right) + 42\left(\frac{d^2}{dx^2} y(x)\right) - 104\left(\frac{d}{dx} y(x)\right) + 169\,y(x) = 0 \quad (11)$$

```
> Sol := dsolve(EcuaEcua)
```

$$Sol := y(x) = \_C1\, e^{2x}\sin(3x) + \_C2\, e^{2x}\cos(3x) + \_C3\, e^{2x}\sin(3x)\,x + \_C4\, e^{2x}\cos(3x)\,x \quad (12)$$

```
>
```