```
> restart
> Dias := Lunes, Martes, Miércoles, Jueves, Viernes, Sábado, Domingo;
```
$$Dias := Lunes, Martes, Miércoles, Jueves, Viernes, Sábado, Domingo \qquad (1)$$

```
> Dias_1
```
$$Lunes \qquad (2)$$

```
> Dias_5
```
$$Viernes \qquad (3)$$

```
> Dias_8
```
Error, invalid subscript selector

```
> Dias_7
```
$$Domingo \qquad (4)$$

```
> DiasSemana := [Dias]
```
$$DiasSemana := [Lunes, Martes, Miércoles, Jueves, Viernes, Sábado, Domingo] \qquad (5)$$

```
> DiasSemana_3
```
$$Miércoles \qquad (6)$$

```
> DiasHabiles := DiasSemana[1..5]
```
$$DiasHabiles := [Lunes, Martes, Miércoles, Jueves, Viernes] \qquad (7)$$

```
> FinSemana := DiasSemana[6..7]
```
$$FinSemana := [Sábado, Domingo] \qquad (8)$$

```
> DiasConjunto := {Dias}
```
$$DiasConjunto := \{Domingo, Jueves, Lunes, Martes, Sábado, Viernes, Miércoles\} \qquad (9)$$

```
> DiasAlfabeticos := sort(DiasSemana)
```
$$DiasAlfabeticos := [Domingo, Jueves, Lunes, Martes, Miércoles, Sábado, Viernes] \qquad (10)$$

```
> restart
> Ecuacion := x··3 + x··2 + x + 1 = 0
```
$$Ecuacion := x^3 + x^2 + x + 1 = 0 \qquad (11)$$

```
> Raiz := solve(Ecuacion)
```
$$Raiz := -1, I, -I \qquad (12)$$

```
> Raiz_1
```
$$-1 \qquad (13)$$

```
> Raiz_2
```
$$I \qquad (14)$$

```
> Raiz_3
```
$$-I \qquad (15)$$

```
> EcuacionOriginal := expand((x - Raiz_1)·(x - Raiz_2)·(x - Raiz_3)) = 0
```
$$EcuacionOriginal := x^3 + x^2 + x + 1 = 0 \qquad (16)$$

```
> restart
> EcuacionDiferencial := y'' + 5·y' + 6·y = 0
```
$$EcuacionDiferencial := \frac{d^2}{dx^2} y(x) + 5 \left(\frac{d}{dx} y(x) \right) + 6 y(x) = 0 \qquad (17)$$

```
> Condiciones := y(0) = 1, D(y)(0) = 2
```

$$Condiciones := y(0) = 1, \mathrm{D}(y)(0) = 2 \qquad (18)$$

> $SolucionGeneral := dsolve(EcuacionDiferencial)$
$$SolucionGeneral := y(x) = \_C1\,e^{-3x} + \_C2\,e^{-2x} \qquad (19)$$

> $SolucionParticular := dsolve(\{EcuacionDiferencial, Condiciones\}, \{y(x)\})$
$$SolucionParticular := y(x) = -4\,e^{-3x} + 5\,e^{-2x} \qquad (20)$$

> $Cond[1] := eval(\,subs(x = 0, rhs(SolucionParticular)))$
$$Cond_1 := 1 \qquad (21)$$

> $Cond[2] := eval(subs(x = 0, rhs(diff(SolucionParticular, x))))$
$$Cond_2 := 2 \qquad (22)$$

> $Comprobacion[1] := eval(subs(y(x) = rhs(SolucionParticular), EcuacionDiferencial))$
$$Comprobacion_1 := 0 = 0 \qquad (23)$$

> $restart$
> $Sistema := 2\,x - 3\,y = 3, -x + 4\,y = -5 : Sistema_1; Sistema_2$
$$2\,x - 3\,y = 3$$
$$-x + 4\,y = -5 \qquad (24)$$

> $Solucion := solve(\{Sistema\}, \{x, y\})$
$$Solucion := \left\{ x = -\frac{3}{5}, y = -\frac{7}{5} \right\} \qquad (25)$$

> $Solucion_1$
$$x = -\frac{3}{5} \qquad (26)$$

> $Solucion_2$
$$y = -\frac{7}{5} \qquad (27)$$

> $restart$
> $MatrizInicial := array([[2, 3], [1, 4]])$
$$MatrizInicial := \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix} \qquad (28)$$

> $with(linalg):$
> $Valor := det(MatrizInicial)$
$$Valor := 5 \qquad (29)$$

> $MatrizInversa := inverse(MatrizInicial)$
$$MatrizInversa := \begin{bmatrix} \dfrac{4}{5} & -\dfrac{3}{5} \\[2mm] -\dfrac{1}{5} & \dfrac{2}{5} \end{bmatrix} \qquad (30)$$

> $MatrizIdentidad := evalm(MatrizInicial \;\&*\; MatrizInversa)$
$$MatrizIdentidad := \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \qquad (31)$$

> $MatrizTriple := array([[1, 2, 3], [4, -5, 6], [7, 8, 9]])$

$$MatrizTriple := \begin{bmatrix} 1 & 2 & 3 \\ 4 & -5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \tag{32}$$

> $ValorTriple := det(MatrizTriple)$

$$ValorTriple := 120 \tag{33}$$

> $TripleInversa := inverse(MatrizTriple)$

$$TripleInversa := \begin{bmatrix} -\dfrac{31}{40} & \dfrac{1}{20} & \dfrac{9}{40} \\[2mm] \dfrac{1}{20} & -\dfrac{1}{10} & \dfrac{1}{20} \\[2mm] \dfrac{67}{120} & \dfrac{1}{20} & -\dfrac{13}{120} \end{bmatrix} \tag{34}$$

> $TripleIdentidad := evalm(\ MatrizTriple\ \&*\ TripleInversa)$

$$TripleIdentidad := \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \tag{35}$$

> $restart$
> $Ecuacion := 2\cdot y\cdot(y'+2) - x\cdot(y')\cdot\cdot 2 = 0$

$$Ecuacion := 2\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}\,y(x) + 2\right) - x\left(\frac{\mathrm{d}}{\mathrm{d}x}\,y(x)\right)^2 = 0 \tag{36}$$

> $Solucion := dsolve(Ecuacion)$

$$Solucion := y(x) = 0,\ y(x) = -4\,x,\ y(x) = \frac{1}{2}\,\frac{x\,(-x+2\_C1)^2}{\_C1^2\left(-\dfrac{-x+2\_C1}{\_C1} + 2\right)} \tag{37}$$

> $SolGral := simplify(Solucion_3)$

$$SolGral := y(x) = \frac{1}{2}\,\frac{(-x+2\_C1)^2}{\_C1} \tag{38}$$

> $DerSolGral := diff(SolGral, x)$

$$DerSolGral := \frac{\mathrm{d}}{\mathrm{d}x}\,y(x) = -\frac{-x+2\_C1}{\_C1} \tag{39}$$

> $Comprueba := simplify(eval(subs(y(x) = rhs(SolGral), Ecuacion)))$

$$Comprueba := 0 = 0 \tag{40}$$

> $SolucionParticular := subs(\_C1 = 2, SolGral)$

$$SolucionParticular := y(x) = \frac{1}{4}\,(-x+4)^2 \tag{41}$$

> $SolucionParticularDos := subs(\_C1 = -6, SolGral)$

$$SolucionParticularDos := y(x) = -\frac{1}{12}\,(-x-12)^2 \tag{42}$$

> $SolSingUno := Solucion_1;\ SolSingDos := Solucion_2$

$$SolSingUno := y(x) = 0$$
$$SolSingDos := y(x) = -4\,x \tag{43}$$

> *SolGral*

$$y(x) = \frac{1}{2}\,\frac{(-x + 2\,\_C1)^2}{\_C1} \tag{44}$$

> $Raiz := solve(rhs(SolGral) = rhs(SolucionParticular), \_C1)$

$$Raiz := 2,\,\frac{1}{8}\,x^2 \tag{45}$$

> $RaizDos := solve(rhs(SolGral) = rhs(SolSingDos), \_C1)$

$$RaizDos := -\frac{1}{2}\,x,\,-\frac{1}{2}\,x \tag{46}$$

> $\_C1$

$$\_C1 \tag{47}$$

>
>
>