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> restart
> SISTEMA := 2·E - 7·D + 12·B = 0, -14·E + 12·D = 0, 12E = 1 : SISTEMA[1]; SISTEMA[2];
  SISTEMA[3]

$$\begin{aligned} 2E - 7D + 12B &= 0 \\ -14E + 12D &= 0 \\ 12E &= 1 \end{aligned} \quad (1)$$

> PARA := solve( {SISTEMA} )

$$PARA := \left\{ B = \frac{37}{864}, D = \frac{7}{72}, E = \frac{1}{12} \right\} \quad (2)$$

> restart
> Ecua := y'' - 7·y' + 12·y = 5·exp(3 x) + x2

$$Ecua := \frac{d^2}{dx^2} y(x) - 7 \frac{d}{dx} y(x) + 12 y(x) = 5 e^{3x} + x^2 \quad (3)$$

> EcuaHom := lhs(Ecua) = 0

$$EcuaHom := \frac{d^2}{dx^2} y(x) - 7 \frac{d}{dx} y(x) + 12 y(x) = 0 \quad (4)$$

> Q := rhs(Ecua)

$$Q := 5 e^{3x} + x^2 \quad (5)$$

> EcuaCarac := m2 - 7·m + 12 = 0

$$EcuaCarac := m^2 - 7m + 12 = 0 \quad (6)$$

> Raiz := solve(EcuaCarac)

$$Raiz := 4, 3 \quad (7)$$

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

$$\begin{aligned} yy_1 &:= e^{4x} \\ yy_2 &:= e^{3x} \end{aligned} \quad (8)$$

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

$$SolGralH := y(x) = _C1 e^{4x} + _C2 e^{3x} \quad (9)$$

> SolGral := y(x) = A·yy[1] + B·yy[2]

$$SolGral := y(x) = A e^{4x} + B e^{3x} \quad (10)$$

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

$$WW := \begin{bmatrix} e^{4x} & e^{3x} \\ 4e^{4x} & 3e^{3x} \end{bmatrix} \quad (11)$$

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

$$BB := \begin{bmatrix} 0 & 5e^{3x} + x^2 \end{bmatrix} \quad (12)$$

> ParaVar := simplify(linsolve(WW, BB))

$$ParaVar := \begin{bmatrix} e^{-4x} (5e^{3x} + x^2) & -x^2 e^{-3x} - 5 \end{bmatrix} \quad (13)$$

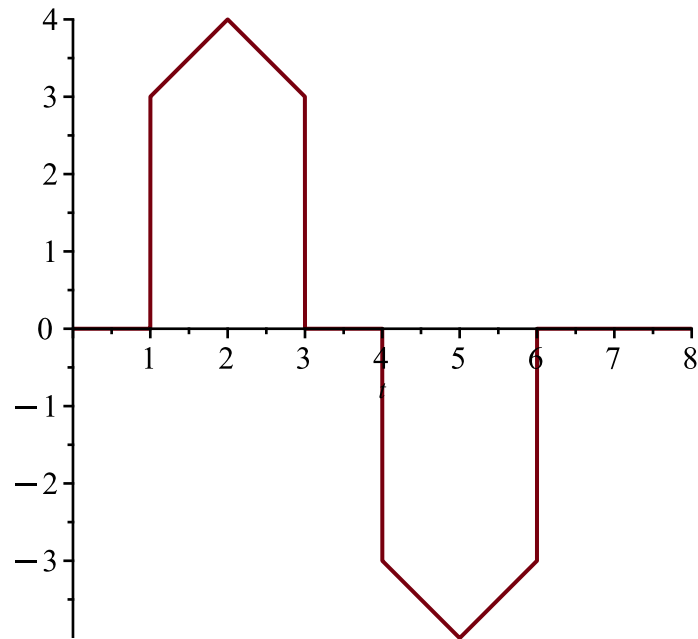

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> Aprima := ParaVar[1]; Bprima := ParaVar[2]
      Aprima := e-4x (5 e3x + x2)
      Bprima := -x2 e-3x - 5 (14)
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> SolGral := y(x) = simplify((int(Aprima, x) + _C1) · yy[1] + (int(Bprima, x) + _C2) · yy[2])
      SolGral := y(x) =  $\frac{37}{864} + (-5 - 5x + \_C2) e^{3x} + \frac{x^2}{12} + \_C1 e^{4x} + \frac{7x}{72}$  (15)
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> restart
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> F := 3 · Heaviside(t - 1) + (t - 1) · Heaviside(t - 1) - 2 · (t - 2) · Heaviside(t - 2) + (t - 3)
      · Heaviside(t - 3) - 3 · Heaviside(t - 3) - 3 · Heaviside(t - 4) - (t - 4) · Heaviside(t
      - 4) + 2 · (t - 5) · Heaviside(t - 5) - (t - 6) · Heaviside(t - 6) + 3 · Heaviside(t - 6) :
      plot(F, t = 0 .. 8, scaling = CONSTRAINED)
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