7.6.12.

$$\begin{cases} x' = 4x - 2y + 2U(t-1) \\ y' = 3x - y + U(t-1) \end{cases}, \quad \begin{cases} x(0) = 0 \\ y(0) = 1/2 \end{cases}$$

$$\begin{cases} sX(s) - 0 = 4X(s) - 2Y(s) + \dfrac{2}{s}e^{-s} \\ sY(s) - 1/2 = 3X(s) - Y(s) + \dfrac{1}{s}e^{-s} \end{cases}$$

$$\begin{cases} (s-4)X(s) + 2Y(s) = \dfrac{2}{s}e^{-s} \\ -3X(s) + (s+1)Y(s) = 1/2 + \dfrac{1}{s}e^{-s} \end{cases}$$

$$X(s)=\frac{\begin{vmatrix}\frac{2}{s}e^{-s} & 2\\ 1/2+\frac{1}{s}e^{-s} & s+1\end{vmatrix}}{\begin{vmatrix}s-4 & 2\\ -3 & s+1\end{vmatrix}}=\frac{2e^{-s}+\frac{2}{s}e^{-s}-1-\frac{2}{s}e^{-s}}{s^2-3s+2}$$

$$Y(s)=\frac{\begin{vmatrix}s-4 & \frac{2}{s}e^{-s}\\ -3 & 1/2+\frac{1}{s}e^{-s}\end{vmatrix}}{\begin{vmatrix}s-4 & 2\\ -3 & s+1\end{vmatrix}}=\frac{\frac{s}{2}+e^{-s}-\frac{4}{s}e^{-s}-2+\frac{6}{s}e^{-s}}{s^2-3s+2}$$

$$X(s) = \frac{2e^{-s} - 1}{(s-1)(s-2)}$$

$$Y(s) = \frac{(s-4)/2}{(s-1)(s-2)} + e^{-s}\frac{2+s}{s(s-1)(s-2)}$$

$$Y(s) = \frac{1}{2}\left(\frac{1}{(s-1)} - \frac{2}{(s-1)(s-2)}\right) + e^{-s}\left(\frac{1}{s} - \frac{3}{(s-1)} + \frac{2}{(s-2)}\right)$$

$$x(t) = -\frac{-e^{+1t} + e^{+2t}}{-1-(-2)} + 2U(t-1)\{\frac{-e^{+1(t-1)} + e^{+2(t-1)}}{-1-(-2)}\}$$

$$y(t) = \frac{1}{2}\{e^{+1t} - 2(\frac{-e^{+1t} + e^{+2t}}{-1-(-2)})\} + U(t-1)\{1 - 3e^{+1(t-1)} + 2e^{+2(t-1)}\}$$

$$x(t) = e^{t} - e^{+2t} + 2U(t-1)\{e^{2(t-1)} - e^{(t-1)}\}$$

$$y(t) = \frac{1}{2}\{3e^{t} - 2e^{2t}\} + U(t-1)\{1 - 3e^{(t-1)} + 2e^{2(t-1)}\}$$