

Str. 27.

3.



$$G(s) = \frac{Y(s)}{U(s)} = \frac{5}{(s+1)(s+3)(s+4)}$$

$$Y(s) [(s+1)(s+3)(s+4)] = 5U(s)$$

$$Y(s) [(s^2+4s+3)(s+4)] = 5U(s)$$

$$Y(s) [s^3+4s^2+4s^2+16s+3s+12] = 5U(s)$$

$$Y(s) [s^3+8s^2+19s+12] = 5U(s)$$

$$y''' + 8y'' + 19y' + 12y = 5u(t)$$

$$\left. \begin{array}{l} x_1 = y \rightarrow \dot{x}_1 = \dot{y} = x_2 \\ x_2 = y' \rightarrow \dot{x}_2 = \ddot{y} = x_3 \\ x_3 = y'' \rightarrow \dot{x}_3 = y''' \end{array} \right\} \begin{array}{l} \dot{x}_3 = 5u(t) - 8x_3 - 19x_2 - 12x_1 \end{array}$$

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -12 & -19 & -8 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 5 \end{bmatrix} u(t)$$