

1. Consider the circuit shown in Figure 1, in which the diodes are assumed to be ideal. Are the input u and the output y linearly related? Is it true that a linear system must consist of only linear components?

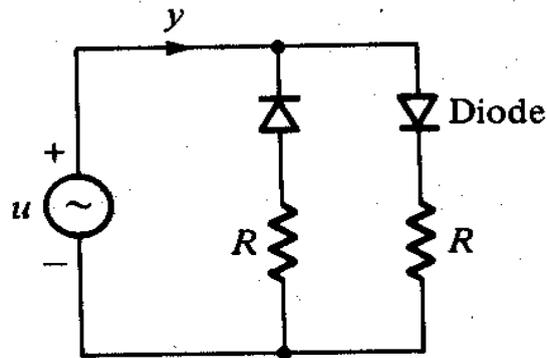


Figure 1

2. Consider the multivariable feedback system shown in Figure 2. Find the transfer function $H(s)$

$$\begin{bmatrix} e(s) \\ y(s) \end{bmatrix} = H(s) \begin{bmatrix} r(s) \\ d(s) \end{bmatrix}$$

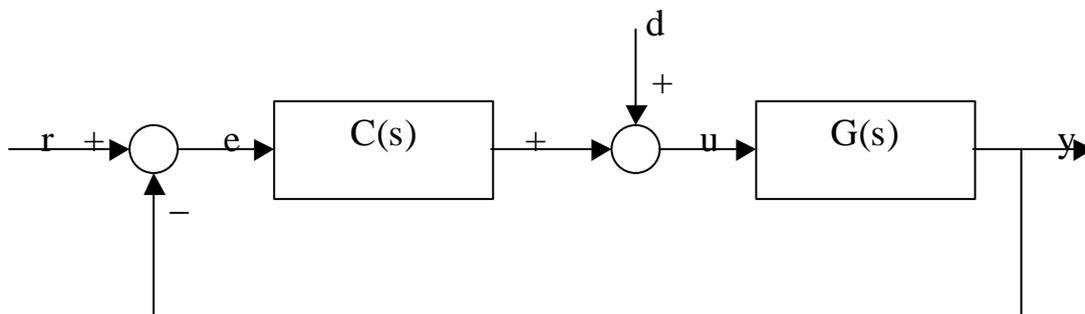


Figure 2

3. Problem 2.3 of Text
4. Problem 2.18 of Text (Only the part that deals with Fig. 2.25).
5. Determine whether the discrete-time system of Figure 3 is linear when $a = 2$, $c = 0.5$ and $m = 4$.

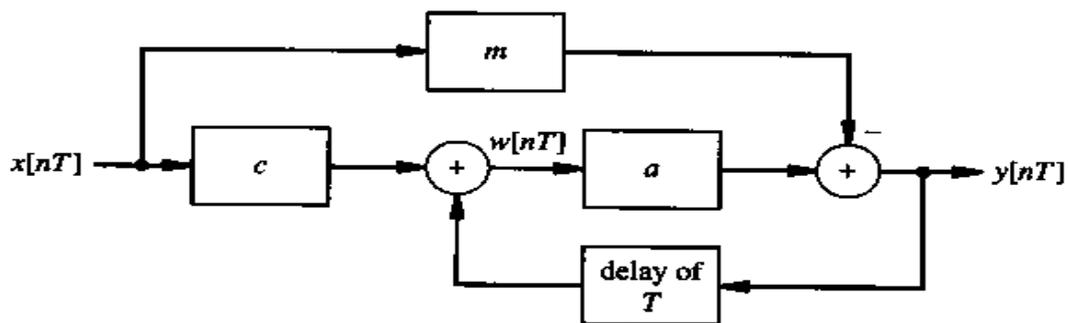


Figure 3