$$G(s) = \frac{7}{(s+4)(s+11)}$$

~~$\frac{7}{s(s)}=$~~

closed-loop poles to be

$$s = -10 \pm j10$$

$$\alpha_c(s) = (s + 10 + j10)(s + 10 - j10)$$

$$= s^2 + 10s - j10s$$

$$+ 10s - j100 + 100$$

$$j10s + j100 + 100$$

$$= s^2 + 20s + 200$$

$$G(s) = \frac{7}{s^2 + 15s + 44}$$

$$\dot{\underline{x}} = \begin{bmatrix} -15 & -44 \\ 1 & 0 \end{bmatrix} \underline{x} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} u$$

$$y = [0, 7]\underline{x}$$

$$A - Bk$$

$$A - Bk \, \dot{\underline{x}} = \begin{bmatrix} -15-k_2 & -44-k_1 \\ 1 & 0 \end{bmatrix} \underline{x} + \{$$

$$\alpha_c'(s) = s^2 + (15 + k_1)s + (44 + k_2) = 0$$

$$\downarrow$$

$$s^2 + 20s + 200$$

$$k_1 = 20 - 15 = 5$$

$$k_2 = 100 - 44 = 156$$

$$u = r - [5, 156] \underline{x}$$