4.1) characteristic equation of a system:

$$P(s) = s^3 + 3Ks^2 + (K+2)s + 4$$

? value o K for a stable system

- Apply Routh-Hurwitz criterion:

3	1	K+2
2	3K	4
1	b_{n-1}	
0	4	

$$b_{n-1} = -\frac{(1.4 - 3K \cdot (K+2))}{3K}$$

$$= \frac{3K(K+2) - 4}{3K}$$

$$c_{n-1} = -\frac{(3K \cdot \emptyset - b_{n-1} \cdot 4)}{b_{n-1}}$$

$$= 4$$

- In order to the system to be stable $b_{n-1} > 0$:

$$3K > 0$$

$$\begin{cases} \frac{3K(K+2)-4}{3K} > 0 \\ 3K > 0 \end{cases} \Leftrightarrow \begin{cases} 3K(K+2) > 4 \\ K \geq 0 \end{cases}$$

$$\begin{cases} K > 0,5275 \\ K > \emptyset \end{cases}$$

$\therefore$ $K > 0,5275 \Rightarrow$ system is stable.