check result.

Hurwitz

1 f) $s^5 + 5s^4 + 11s^3 + 23s^2 + 28s + 12$

5	1	11	28
4	5	23	12
3	$\frac{32}{5}$	$\frac{128}{5}$	
2	3	12	
1	ε	0	
0	12		

special case 1.1

If case 1 and the sign of the coeficient above ε its the same as that below it indicates that there are a pair of imaginary roots.

Has a pair of imaginary roots and is in limit of stability!

$$e_{n-1} = -\frac{1}{3} \cdot \begin{vmatrix} 2 & -\frac{12}{5} \\ 3 & 4 \end{vmatrix} =$$

$$= -\frac{1}{3}\left(8 + \frac{36}{5}\right) = -\frac{8}{3} - \frac{36}{15}$$

Duas trocas de sinal, implica duas raizes com duas raizes parte real positiva. instavel.

1 f)

$$s^5 + 5s^4 + 11s^3 + 23s^2 + 28s + 12$$

$$\begin{array}{c|ccc} 5 & 1 & 11 & 28 \\ 4 & 5 & 23 & 12 \\ 3 & a_{n-1} = 32/5 & a_{n-3} = 128/5 & \\ 2 & b_{n-1} = 3 & 12 & \\ 1 & c_{n-1} = 0 & & \\ 0 & 12 & & \end{array}$$

sempre

$$a_{n-1} = -\frac{1}{5}\begin{vmatrix} 1 & 11 \\ 5 & 23 \end{vmatrix}$$

$$23 - 55$$

$$= \frac{32}{5} \quad 12 - 1140$$

$$a_{n-3} = -\frac{1}{5}\begin{vmatrix} 1 & 28 \\ 5 & 12 \end{vmatrix}$$

$$= \frac{128}{5}$$

duas raizes eixo imaginario

$$b_{n-1} = -\frac{5}{32}\begin{vmatrix} 5 & 23 \\ \frac{32}{5} & \frac{128}{5} \end{vmatrix}$$

$$128 - \frac{23.32}{5}$$

$$= -\frac{5.128}{32} + 23$$

$$= 3$$

$$b_{n-2} = -\frac{5}{32} \cdot \begin{vmatrix} 5 & 12 \\ \frac{32}{5} & 0 \end{vmatrix}$$

$$= 12$$

$$c_{n-1} = -\frac{1}{3}\begin{vmatrix} \frac{32}{5} & \frac{128}{5} \\ 3 & 12 \end{vmatrix}$$

$$= -\frac{1}{3}\left(\frac{32 \times 12}{5} - \frac{128 \times 3}{5}\right)$$

$$= 0$$

é estavel