

Temp

des compositions

2

dp

$$X(s) = \frac{s^3 + 8s^2 + 45s + 8}{s(s+1)(s^2 + 4s + 8)}$$

$$X(s) = \frac{u_1}{s} + \frac{u_2}{s+1} + \frac{A}{s+1-j} + \frac{A^*}{s+1+j}$$

$$h_1 = \frac{5x(5)}{s=0}$$

$$\rightarrow k_1 = \frac{8}{8} \rightarrow \boxed{k_1 = 1}$$

Para k_2

$$k_2 = (s+1) \times (s) \Big|_{s=-1} \rightarrow k_2 = \frac{(s+1)(2s^3 + 8s^2 + 4s + 8)}{s(s+1)(s^2 + 4s + 8)} \Big|_{s=-1}$$

$$\rightarrow k_2 = \frac{2(-1)^3 + 8(-1)^2 + 4(-1) + 8}{(-1)((-1)^2 + 4(-1) + 8)} \rightarrow \boxed{k_2 = -2}$$

Para A

$$A = (s+2+j2) \times (s) \Big|_{s=-2-j2} \rightarrow A = \frac{(s+2+j2)(2s^3 + 8s^2 + 4s + 8)}{s(s+1)(s+2-j2)(s-2-j2)} \Big|_{s=-2-j2}$$

$$\rightarrow A = \frac{(s+2+j2)(2s^3 + 8s^2 + 4s + 8)}{s(s+1)(s+2-j2)(s-2-j2)}$$

$$\rightarrow A = \frac{2s^3 + 8s^2 + 4s + 8}{s(s+1)(s+2-j2)} \Big|_{s=-2-j2}$$

$$\rightarrow A = \frac{32 + j24}{24 + j8} \rightarrow 1 = \frac{4 + j3}{3 + j}$$

$$\rightarrow A = \frac{4-j3}{3+j} \cdot \frac{3-j}{3-j} \rightarrow \boxed{A = 1,5-j0,5}$$

→ sustituyendo en las FP iniciales se tiene lo siguiente

$$X(s) = \frac{1}{s} + \frac{-2}{s+1} + \frac{1,5+j0,5}{s+2+j2} + \frac{1,5-j0,5}{s+2-j2}$$

Teorema del valor final

$$Vf = \lim_{s \rightarrow 0} s G(s)$$

$$\text{Ejemplo} \rightarrow G(s) = \frac{1}{s(s+4)(s+6)}$$

