Oscar Eduardo Rodriguez M

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$$X_{(S)} = \frac{2S^3 + 8S^2 + 4S + 8}{S(S+1)(S^2+4S+8)}$$

$$\frac{k_1}{S} + \frac{k_2}{S+1} + \frac{A}{S+2+j2} + \frac{A^*}{S+2-j} \quad ; \quad k_1 = S \, X_{(S)} \Big/_{S=0}$$

$$\Rightarrow k_1 = \cancel{S} \frac{\cancel{2S^3} + 8S^2 + 4S + 8}{\cancel{S}(S+1)(S^2+4S+8)} \Big/_{S=0} \Rightarrow \frac{8}{8} = 1$$

$$k_2 = (S+1) \, X_{(S)} \Big/_{S=-1} \Rightarrow (S+1) \frac{2S^3 + 8S^2 + 4S + 8}{S\cancel{(S+1)}(S^2+4S+8)} \Big/_{S=-1}$$

$$\Rightarrow \frac{2(-1)^3 + 8(-1)^2 + 4(-1) + 8}{(-1)((-1)^2 + 4(-1) + 8)} \Rightarrow \frac{-2 + 8 - 4 + 8}{(-1)(1 - 4 + 8)} \Rightarrow \frac{10}{-5} \quad \therefore k_2 = -2$$

$$A = (S+2+j2) \, X_{(S)} \Big/_{S=-2-j} \Rightarrow (S+2+j2) \frac{2S^3 + 8S^2 + 4S + 8}{S(S+1)(S^2+4S+8)} \Big/_{S=-2-2j}$$

$$\Rightarrow \frac{2S^3 + 8S^2 + 4S + 8}{S(S+1)(S-2-j2)} \Big/_{S=-2-2j}$$

$$2S^3 = 2[-2-2j]^3 = 2\left\{ (-2)^3 + 3(-2)^2(-2j) + 3(-2)(-2j)^2 + (-2j)^3 \right\}$$

$$(-2j)^3 = (-1)^3 2^3 j^3 = (-1)^3 2^3 j^3 = -18j = -8(-1)j = 8j$$

$$2S^3 = 2[-8 - j24 + 24 + 8j] = 2[16 - 16j]$$

$$\Rightarrow 2S^3 = 32 - 32j \qquad \Rightarrow 8S^2 = 8(-2-2j)^2 = 64j$$

$$\Rightarrow A = \frac{2S^3 + 8S^2 + 4S + 8}{S(S+1)(S+2-2j)}$$

$\Rightarrow$ Númerador $\quad 32 - 32j + 64j + 4((-2-2j)+8 \Rightarrow 32 - 24j$

$\underbrace{\qquad\qquad}$

$-8 - 8j + 8$

Denominador

$$S(S+1)(S+2-2j) = (-2-2j)(-2-2j+1)(-2-2j+2+2j) = 24 + 8j$$

$$\Rightarrow A = \frac{32+24j}{24+8j} = \frac{8(4+3j)}{8(3+j)} \cdot \frac{3-j}{3-j} = \frac{15-5j}{10}$$

$$\Rightarrow A = 1{,}5 - 0{,}5j$$

$$X_{(s)} = \frac{1}{S} + \frac{-2}{(S+1)} + \frac{1{,}5+0{,}5j}{S+2+2j} + \frac{1{,}5+0{,}5j}{S+2-2j}$$