Tarea Video #2 ->

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

$$\frac{K_1}{s} + \frac{K_2}{s+1} + \frac{A}{s+2+j2} + \frac{A^*}{s+2-j2}$$

$$K_1 = sX(s)\Big|_{s=0} \quad \rightarrow \quad X(s) = \left[\frac{2s^3 + 8s^2 + 4s + 8}{s(s+1)(s^2+4s+8)}\right] s$$

$$\frac{8}{8} = 1; \quad K_1 = 1$$

$$K_2 = (s+1)X(s)\Big|_{s=-1} \quad \rightarrow$$

$$X(s) = (s+1)\left[\frac{2s^3 + 8s^2 + 4s + 8}{s(s+1)(s^2+4s+8)}\right] \quad \rightarrow$$

$$-\frac{10}{5} = -2;$$

$$K_2 = -2$$

$$A = (s+2+j2)X(s)\Big|_{s=-2-j2} \quad \rightarrow$$

$$X(s) = (s+2+2j)\left[\frac{2s^3+8s^2+4s+8}{s(s+1)(s^2+4s+8)}\right] \rightarrow$$

$$X(s) = (s+\cancel{2}+2j)\left[\frac{2s^3+8s^2+4s+8}{s(s+1)(s+\cancel{2}+2j)(s+2-2j)}\right] \rightarrow$$

$$\frac{32-32j+64j-8-8j+8}{(-2-2j)(-1-2j)(-4j)} \rightarrow$$

$$\frac{3}{2}+\frac{1}{2}j = A$$

$$A^* = \frac{3}{2}-\frac{1}{2}j \rightarrow$$

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

$$\frac{1}{s} - \frac{2}{s+1} + \frac{1,5+0,5j}{s+2+2j} + \frac{1,5-0,5j}{s+2-2j} \checkmark$$