Parcial 1: Señales y Sistemas

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Componentes teóricas de solución a mano

A. Distancia media de dos señales periódicas $d^2(x1-x2)^2$ con potencia

A.
$$d^{2}(x, x_{0}) = P_{x_{0}} - P_{x_{0}} = \lim_{T \to \infty} \frac{1}{T} \int_{T} |x_{0}| - x_{0}(t)^{2} dt$$

$$\frac{1}{T \to \infty} \int_{T} |Ae^{j\omega_{0}t} - be^{j\omega_{0}t}|^{2} dt$$

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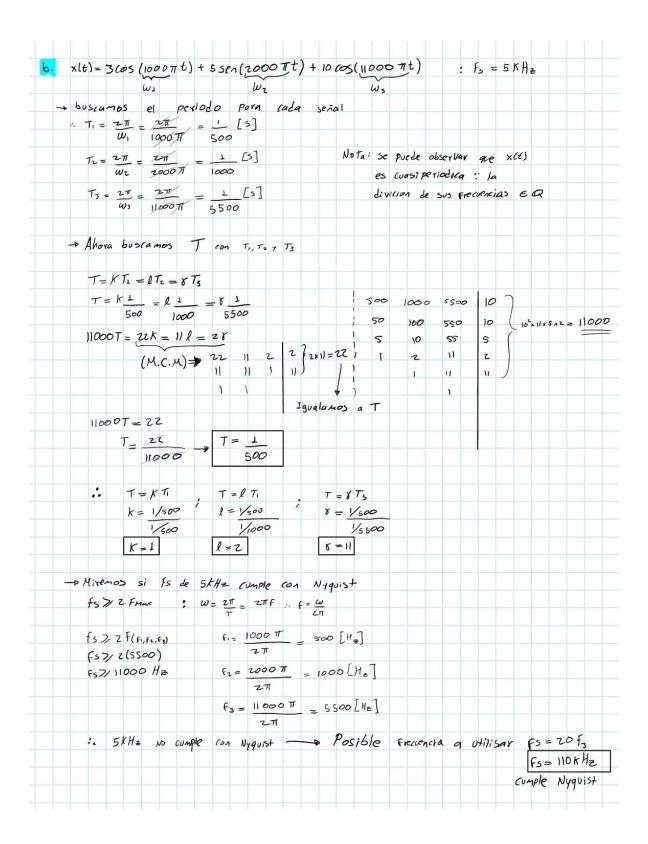
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$$= \lim_$$

media.

B. Señal obtenida en el tiempo discreto utilizando un conversor análogo digital a una frecuencia de muestreo $f_s = 5kHz$



Ahora discretizames la seral para 5 KHz

$$x(t) = 3\cos(1000\pi t) + 5\sin(2000\pi t) + 10\cos(11000\pi t)$$
 $x(t+n) = 3\cos(1000\pi n) + 5\sin(2000\pi n) + 10\cos(11000\pi n)$
 $x(n) = 3\cos(\frac{1000\pi n}{5000}) + 5\sin(\frac{2000\pi n}{5000}) + 10\cos(\frac{11000\pi n}{5000})$
 $x(n) = 3\cos(\frac{\pi n}{500}) + 5\sin(\frac{2\pi n}{5000}) + 10\cos(\frac{\pi n}{5000})$
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C. Encontrar T para discretisar

C. ×lt	i) = 10 c	$os\left(\frac{t}{3}\right)$	$cos(\frac{t}{4})$				
		w,	Wz				
- comp	roban	es es	Cuasi F	periodica			
				es cousiper	iodica		
→ busa	camos	T					
T, =	211 =	$2\pi = 6$	π ?.: -	T= l T1 = k Tz = l 6 π = k 8			
	wı	V3	(7	$r = 16\pi = k8$	TT	M.C. M (6,	8) = 24
T2 =	= 2 =	27 = 8	π) 1	= l6 = K8			
	WZ	1/4	П				
				T= 24 -	T=24	П	
				π			
• 6	l = T	;	K= + 72				
	Ti						
	1 = 247		K= 24TT				
	1/3	T	1/4				
	1=77		K=96				