

p186.

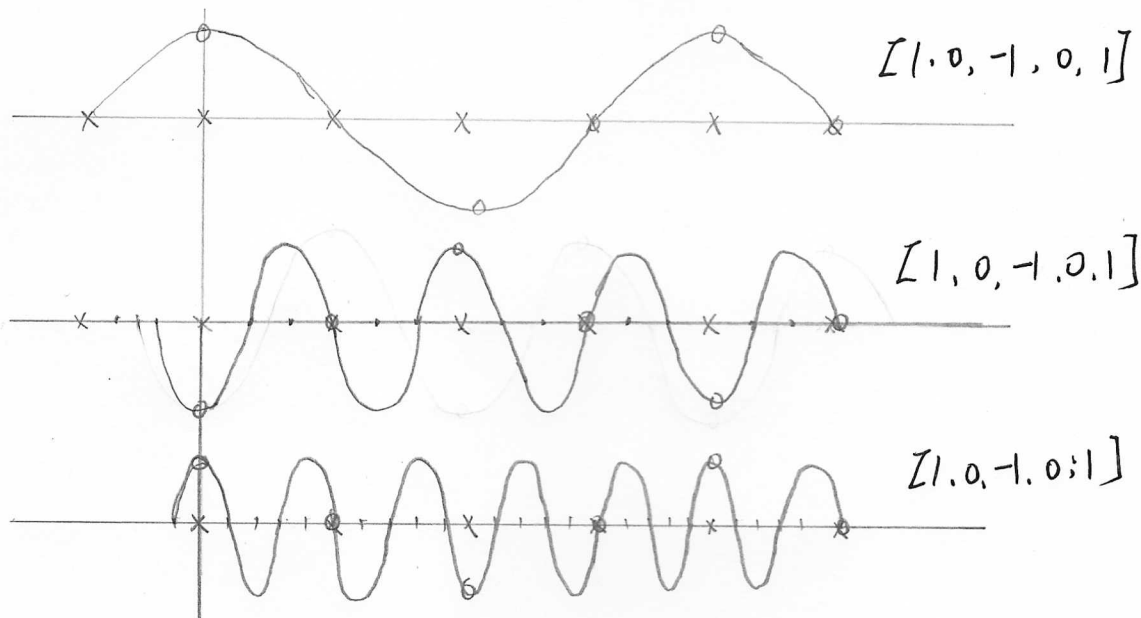
第五次作业.

$$2. T = \frac{2\pi}{\omega} = \frac{1}{4}.$$

$$R1 \quad X_{a1}(t) = \sum_{n=-10}^{10} X_{a1}(nT) \cdot \delta(t-nT) = \sum_{n=-10}^{10} \cos\left(\frac{n\pi}{2}\right) \cdot \delta(t-\frac{1}{4}n)$$

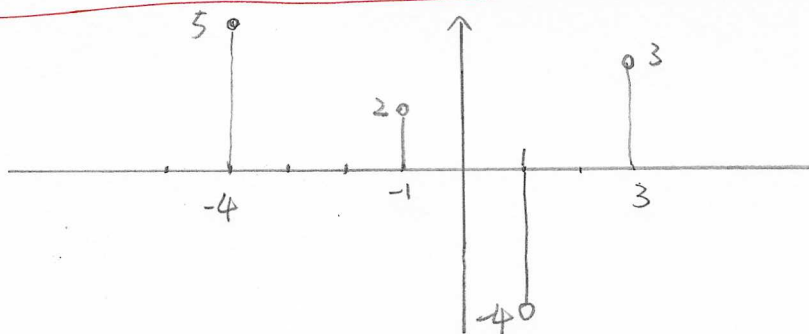
$$X_{a2}(t) = \sum_{n=-10}^{10} X_{a2}(nT) \cdot \delta(t-nT) = -\sum_{n=-10}^{10} \cos\left(\frac{5}{2}n\pi\right) \cdot \delta(t-\frac{1}{4}n)$$

$$X_{a3}(t) = \sum_{n=-10}^{10} X_{a3}(nT) \cdot \delta(t-nT) = \sum_{n=-10}^{10} \cos\left(\frac{5}{2}n\pi\right) \cdot \delta(t-\frac{1}{4}n)$$



三个信号经采样后输出信号一样, 无法区分, 频谱混叠.

4.



$$X(n) = 5\delta(n+4) + 2\delta(n+1) - 4\delta(n-1) + 3\delta(n-3)$$

$$1). T_s = \frac{1}{f_s} = \frac{1}{1000}$$

$$R1: X_s(n) = A \cdot \cos(200\pi \cdot n \cdot \frac{1}{1000}) + B \cdot \cos(500\pi \cdot n \cdot \frac{1}{1000}) \\ = A \cdot \cos(\frac{2}{10}n\pi) + B \cos(\frac{5}{10}n\pi)$$

$$R1 \quad \Omega_0 = \frac{1}{10}\pi \quad N = \frac{2\pi}{\Omega_0} = 20.$$

$$X(k\Omega_0) = \frac{1}{20} \sum_{n=0}^{19} (A \cdot \cos(\frac{1}{5}n\pi) + B \cdot \cos(\frac{1}{2}n\pi)) \cdot e^{-j \cdot k \cdot \frac{\pi}{10} \cdot n}$$

补题:

$$h(n) = \{-2, 2, 0, 1, 5\}$$

$$x(n) = \{2, 1, 6, 1, -1, 4\}$$

$$\text{求 } h(n) * x(n)$$

			-2	2	0	1	5		
		2	1	6	1	-1	4		
				-8	8	0	4	20	
			2	-2	0	-1	-5		
		-2	2	0	1	5			
	-12	12	0	6	30				
	-2	2	0	1	5				
-4	4	0	2	10					
-4	2	-10	12	15	1	39	4	-1	20

$$h(n) * x(n) = \{-4, 2, -10, 12, 15, 1, 39, 4, -1, 20\}$$