陆昊融 518370910194 王世博 518370910109 罗辰昊 518370910038
周维凯 518021911039 徐晟元 518370910200

1. Let $x_1(t) = \sum_{n=-\infty}^{\infty} \delta(t-6n)$

$$x_2(t) = \sum_{n=-\infty}^{\infty} \delta(t-6n-2)$$

$$x_3(t) = \sum_{n=-\infty}^{\infty} \delta(t-6n+2)$$

We find FS of $x_1(t)$. $x_2(t)$. $x_3(t)$ respectively.

FS of $x_1(t) = \sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0t}$ $\qquad$ $w_0 = \frac{\pi}{3}$

--- $x_2(t) = \sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0(-2)} \cdot e^{jkw_0t}$

--- $x_3(t) = \sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0 2} \cdot e^{jkw_0t}$

$\therefore$ FS of $x(t) = 2\sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0t} - \sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0(-2)} \cdot e^{jkw_0t} - \sum_{n=-\infty}^{\infty} \frac{1}{6} e^{jkw_0 2} \cdot e^{jkw_0t}$

$$= \sum_{n=-\infty}^{\infty} \frac{1}{3} \left[1-\cos(2kw_0)\right] e^{jkw_0t}$$

$\therefore$ $X(w) = \sum_{n=-\infty}^{\infty} 2w_0 \left[1-\cos(2kw_0)\right] \delta(w-kw_0)$

$$\boxed{= \sum_{n=-\infty}^{\infty} \frac{2}{3}\pi \cdot \left[1-\cos\left(\frac{2}{3}k\pi\right)\right] \delta\left(w-\frac{2}{3}k\pi\right)}$$