$$\tilde{X}(f) = \Sigma$$

$$y(t) = y_1(t) + y_2(t) + y_3(t)$$

$$y_1(t) = -x(t)$$

$$y_2(t) = 2x(t-T)$$

$$y_3(t) = -x(t-2T)$$

$$y(t) = -x(t) + 2x(t-T) - x(t-2T)$$

$$Y(f) = -X(f) + 2X(f)e^{-j2\pi fT} - X(f)e^{-j4\pi fT}$$

$$X(f) = \frac{A}{2}e^{j\varphi}\delta(f-f_0) + \frac{A}{2}e^{-j\varphi}\delta(f+f_0) =$$

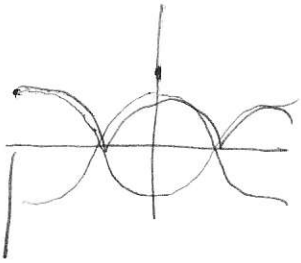
$$= \frac{A}{2}e^{j\varphi}\delta\left(f-\frac{1}{4T}\right) + \frac{A}{2}e^{-j\varphi}\delta\left(f+\frac{1}{4T}\right)$$

$$X(f)\left[-1 + 2e^{-j2\pi fT} - e^{-j4\pi fT}\right] =$$

$$= X(f)e^{-j2\pi fT}\left[e^{j2\pi fT} + 2 - e^{-j2\pi fT}\right] =$$

$$= X(f)e^{-j2\pi fT}\left[2 - 2\cos 2\pi fT\right]$$

$$|Y(f)| = 2|X(f)|\,|1-\cos 2\pi f T| =$$



$$= 2\left[\frac{A}{2}\delta(f-f_1) + \frac{A}{2}\delta(f+f_0)\right]\cos 2\pi f_1$$

$$\cos 2\pi \frac{21}{4}T = \cos 2\frac{21}{4}\pi = -\cos\frac{\pi}{4}$$