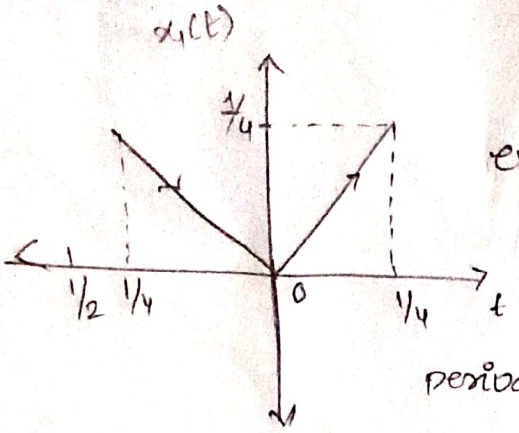
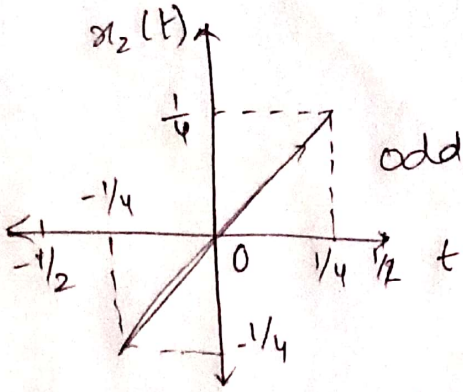
1.40c



even function

period $T = 1$



odd function.

period $T = 1$.

$x_1(-t) = +x_1(t)$, symmetric along the y-axis.

$x_1(t)$ is an even periodic function. By even-function symmetry,

$$a_k = \frac{4}{T}\int_0^{T/2} x_1(t)\cos k\omega_0 t\, dt \quad \text{(real coefficients)}$$

$b_k = 0$ (imaginary coefficients), for all k.

$x_2(-t) = -x_2(t)$

$x_2(t)$ is an odd periodic function. By odd function symmetry.

$a_k = 0$, $\forall k$ (real coeff $= 0$)

$$b_k = \frac{4}{T}\int_0^{T/2} x_2(t)\sin k\omega_0 t\, dt.$$

(imaginary coefficients)