

Corrige type Interrogation TS

$$1^{\circ} / x(t) = \begin{cases} 2 & : -\frac{T}{2} < t \leq +\frac{T}{2} \\ 0 & : \text{ailleurs} \end{cases} \quad (1)$$

$$2^{\circ} / X(\omega) = \int_{-\frac{T}{2}}^{+\frac{T}{2}} 2 e^{-j2\pi(\omega)t} dt = 2 \int_{-\frac{T}{2}}^{+\frac{T}{2}} dt = [2t]_{-\frac{T}{2}}^{+\frac{T}{2}} = 2\left(\frac{T}{2} + \frac{T}{2}\right) = 2T \quad (1)$$

$$3^{\circ} / X(f) = \int_{-\infty}^{+\infty} x(t) e^{-j2\pi f t} dt \quad (1)$$

$$= \int_{-\frac{T}{2}}^{+\frac{T}{2}} e \cdot e^{-j2\pi f t} dt \quad (1)$$

$$= 2 \frac{e^{-j2\pi f t} \Big|_{-\frac{T}{2}}^{+\frac{T}{2}}}{-j2\pi f} \quad (1)$$

$$= -\frac{2}{j2\pi f} \left(e^{-j2\pi f \left(\frac{T}{2}\right)} - e^{-j2\pi f \left(-\frac{T}{2}\right)} \right) \quad (1)$$

$$= \frac{2}{j2\pi f} \left(e^{j\pi f T} - e^{-j\pi f T} \right) \times \frac{T}{T} \quad (1)$$

$$= \frac{2T}{\pi f T} \sin(\pi f T) \quad (1)$$

$$= 2T \cdot \text{sinc}(\pi f T) \cdot (1)$$

