

excl

$$\text{I} \left( \frac{t-4}{2} \right) \Rightarrow \begin{array}{|c|c|c|} \hline & & \\ \hline 3 & 4 & 5 \\ \hline \end{array}$$

$$\text{II} \left( \frac{t-9}{4} \right) \Rightarrow \begin{array}{|c|c|c|} \hline & & \\ \hline 7 & 9 & 11 \\ \hline \end{array}$$

$$\begin{aligned} E & \lim_{T \rightarrow \infty} \int_3^5 20 e^{2-4t} + \int_7^{11} e^{4t} \\ & = \frac{20}{-4} e^{-4t} \Big|_3^5 + \frac{1}{4} e^{4t} \Big|_7^{11} \\ & = -100 e^{-4t} \Big|_3^5 + \frac{1}{4} e^{4t} \Big|_7^{11} \\ & = -100 [e^{-20} - e^{-42}] + \frac{1}{4} [e^{44} - e^{28}] \\ & = 100 [0.0] = 3.213 \times 10^{18} \end{aligned}$$

$$\begin{aligned} & = 0.024 + 1791855121 \\ & = 1.8 \times 10^9 \end{aligned}$$

$$P = \lim_{T \rightarrow \infty} \int_{-T}^T \frac{E}{2T} = 0$$

is energy

exc 2

$$\cancel{x(t) = \delta(2(t + \frac{1}{2}))} \quad x(t) = \delta(2(t + \frac{1}{2}))$$

$$\text{in } t_0 = -\frac{1}{2}$$

$$x\left(-\frac{1}{2}\right) = 6 \cdot \left(-\frac{1}{2}\right)^2 \cos^2\left(4\pi \cdot -\frac{1}{2} + \frac{\pi}{6}\right)$$

$$= \frac{6}{4} \cos^2\left(-2\pi + \frac{\pi}{6}\right)$$

$$= \frac{6}{4} \cos^2\left(-\frac{11\pi}{6}\right)$$

$$= \frac{3}{2} \cos^2\left(-\frac{11\pi}{6}\right)$$

$$= 2.98$$

by sampling theorem