



$$X[k] = \frac{1}{T} \int_0^{Pw} A e^{-jk\omega_0 t} dt$$

$$X[k] = \frac{A}{T} \int_0^{Pw} e^{-jk\omega_0 t} dt$$

$$X[k] = \left. -\frac{A}{T} \frac{e^{-jk\omega_0 t}}{jk\omega_0} \right|_0^{Pw}$$

$$X[k] = -\frac{A}{T} \left(\frac{e^{-jk\omega_0 Pw}}{jk\omega_0} - \frac{1}{jk\omega_0} \right)$$

$$X[k] = \frac{-A e^{-jk\omega_0 Pw}}{T j k \omega_0} + \frac{A}{T j k \omega_0} \quad \rightarrow \text{for } k \neq 0$$

for $k = 0$:

$$X[0] = \frac{1}{T} \int_0^{Pw} A dt$$

$$X[0] = \frac{A}{T} \int_0^{Pw} dt$$

$$X[0] = \frac{A}{T} \cdot Pw$$

for reconstruction:

$$x(t) = \sum_{k=-\infty}^{\infty} C_k e^{jk\omega_0 t}$$

where $C_k = \frac{1}{T} \int_0^{Pw} x(t) e^{-jk\omega_0 t} dt$