

(273-92)

1 Tuesday

(274-91)

2 Wednesday

$$\begin{aligned}
 a_k &= \frac{1}{T_s} \int_0^{T_s} \frac{1}{T_p} e^{-2\pi i k j / T_s} \\
 &= \frac{j}{T_s T_p} \left(\frac{T_s}{2\pi i k} \right) \left[e^{-2\pi i T_p k j / T_s} - 1 \right] \\
 &= \frac{j}{T_p \cdot 2\pi i k} \left[e^{2\pi i T_p k / T_s} - 1 \right]
 \end{aligned}$$

$$\text{Thus } P(f) = \sum_{k=-\infty}^{\infty} a_k \delta\left(f - \frac{k}{T_s}\right)$$

$$= \sum_{k=-\infty}^{\infty} \frac{1}{2\pi i} \left[e^{2\pi i T_p k / T_s} - 1 \right] \delta\left(f - \frac{k}{T_s}\right)$$

$$\text{Thus } P(\omega) = \sum_{k=-\infty}^{\infty} \frac{2\pi}{T_p} a_k \delta\left(f - \frac{2\pi k}{T_s}\right)$$

$$= \sum_{k=-\infty}^{\infty} \frac{j \left[e^{2\pi i T_p k / T_s} - 1 \right]}{k T_p} \delta\left(f - \frac{2\pi k}{T_s}\right)$$