(since $Y \cdot W = I$ and $W = {}^tW$)

$$= \log h(z) + \pi i (z_r - \bar{z}_r) + \pi i (z_r - \bar{z}_r)$$
$$= \log h(z) - 4\pi \, I_m (z_r);$$

hence
$$h(z+\lambda_{n+r}) = |e^{2\pi i z_r}|^2 \, h(z).$$

Γ Since $(\lambda_r)_\alpha = \delta_r$ if $r=\alpha$ and real,
$= 0$ otherwise,

$$h(z+\lambda_r) = e^{(\pi/2) \sum W_{\alpha\beta} (z_\alpha + (\lambda_r)_\alpha - \overline{z_\alpha + (\lambda_r)_\alpha})(z_\beta + (\lambda_r)_\beta - \overline{z_\beta + (\lambda_r)_\beta} - 2i Y_{\beta\beta})}$$

$$= h(z). \; //$$

Since $(\lambda_{n+r})_\alpha = Z_{\alpha r}$, $z_\alpha + (\lambda_{n+r})_\alpha - \overline{z_\alpha + (\lambda_{n+r})_\alpha} = z_\alpha - \bar{z}_\alpha + (Z_{\alpha r} - \overline{Z_{\alpha r}}) = z_\alpha - \bar{z}_\alpha + 2i Y_{\alpha r}$ and $z_\beta + (\lambda_{n+r})_\beta - \overline{z_\beta + (\lambda_{n+r})_\beta} - 2i Y_{\beta\beta}$
$= z_\beta - \bar{z}_\beta + 2i Y_{\beta r} - 2i Y_{\beta\beta}$ $\Rightarrow$ We obtain the first equation of $\log h(z+\lambda_{n+r})$.

$$W_{\alpha\beta} Y_{\beta\gamma} = \delta_{\beta\gamma} = \begin{cases} 1 & \text{if } \beta = \gamma \\ 0 & \text{otherwise.} \end{cases}$$

$$\Rightarrow \frac{\pi}{2} \sum_{\alpha,\beta} W_{\alpha\beta} (z_\alpha - \bar{z}_\alpha) \cdot 2i Y_{\beta\gamma} = \frac{\pi}{2} \sum_{\alpha} \delta_{\alpha\gamma} (z_\alpha - \bar{z}_\alpha) \cdot 2i$$

By P310, $Z = {}^tZ$ $\Rightarrow$ Since $Z = X + \sqrt{-1}\, Y$,
${}^tY = Y$. $\Rightarrow$ $WY = I$ $\Rightarrow {}^tY\,{}^tW = I = Y\,{}^tW$
$\Rightarrow {}^tW = W$.