9) b) $X_c(e^{j\omega}) = \frac{1}{2}\left[X(e^{j(\omega-\frac{\pi}{8})}) + X(e^{j(\omega+\frac{\pi}{8})})\right]$

$X_s(e^{j\omega}) = \frac{1}{2j}\left[X(e^{j(\omega-\frac{\pi}{8})}) - X(e^{j(\omega+\frac{\pi}{8})})\right]$

10)
$X(e^{j\omega}), e^{j2\omega} \Rightarrow$ real valued

$\downarrow$

$\underbrace{A(e^{j\omega}) \cdot e^{-j2\omega}}_{\text{real valued}}$

$\angle X(e^{j\omega}) = \begin{cases} -2\omega & A(e^{j\omega}) > 0 \\ -2\omega \pm (2k+1)\pi & A(e^{j\omega}) < 0 \end{cases}$ (periodic with 2π)