3.19 We have $X(k) = \sum_{n=0}^{N-1} x(n)\ W^{nk} = \sum_{n=0}^{N-1} x^*(n)\ W^{nk} =$

$$= \left[\sum_{n=0}^{N-1} x(n)\ W^{-nk}\right]^* = \left[\sum_{n=0}^{N-1} x(n)\ W^{(N-k)n}\right]^* = X^*(N-k)$$

Thus, $X(k) = X^*(N-k)$