DFT of $x(n)$ is given by

$$X(K) = \sum_{n=0}^{N-1} x(n) W \qquad N = 8 \qquad x(n) = \{4, 3, 2, 6, 8, 4, 6, 3\}$$

$$X(K) = \sum_{n=0}^{7} x(n) W_8^{nK}$$

Using direct calculation method

$W = 1$ $W = 0.707-0.707j$ $W = -j$ $W = -0.707-0.707j$

$W = -1$ $W = -0.707+0.707j$ $W = j$ $W = 0.707+0.707j$

$X(0) = 4+3+2+6+8+4+6+3 = 36$

$X(1) = 4+3W+2W+6W+8W+4W+6W+3W = -6.82+2.58j$

$X(2) = 4+3W+2W+6W+8W+4W+6W+3W = 4+2j$

$X(3) = 4+3W+2W+6W+8W+4W+6W+3W = -1.17-5.41j$

$X(4) = 4+3W+2W+6W+8W+4W+6W+3W = 4$

$X(5) = -1.17+5.41j = X^*(3)$ (Conjugate Symmetry Property)

$X(6) = 4-2j = X^*(2)$

$X(7) = -6.82-2.58j = X^*(1)$

$X(K) = \{36, -6.82+2.58j, 4+2j, -1.17-5.41j, 4, -1.17+5.41j, 4-2j, -6.82-2.58j\}$

Same in matlab

IDFT

$$X(K) = \sum_{n=0}^{N-1} x(n) W_N^{nK} \times \frac{1}{N} \qquad N = 8$$

IDFT using DFT

$$x(n) = \left\{ \sum_{K=0}^{N-1} X^*(K)\, W_N^{Kn} \right\}^*$$

$X(K) = \{36, -6.82+2.58j, 4+2j, -1.17-5.41j, 4,$
$-1.17+5.41j, 4-2j, -6.82-2.58j \}$

$X^*(K) = \{36, -6.82-2.58j, 4-2j, -1.17+5.41j, 4,$
$-1.17-5.41j, 4+2j, -6.82+2.58j \}$

$x(0) = 36 - 6.82 - 2.58j + 4 - 2j - 1.17 + 5.41j + 4 - 1.17 - 5.41j + 4 + 2j - 6.82 + 2.58j = 4$

$x(1) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 3$

$x(2) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 2$

$x(3) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 6$

$x(4) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 8$

$x(5) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 4$

Same

$x(6) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 6$

$x(7) = 36 + (-6.82-2.58j)W + (4-2j)W + (-1.17+5.41j)W + (4)W + (-1.17-5.41j)W + (4+2j)W + (-6.82+2.58j)W = 3$

$$x(n) = \{4,\ 3,\ 2,\ 6,\ 8,\ 4,\ 6,\ 2\}$$
$$\uparrow$$

DTFT

$$X(e^{j\Omega}) = \sum_{n=-\infty}^{\infty} x(n)e^{-j\Omega n}$$
$$= \sum_{n=0}^{7} x(n)e^{-j\Omega n}$$
$$= x(0) + x(1)e^{-j\Omega} + x(2)e^{-2j\Omega} + x(3)e^{-3j\Omega} + x(4)e^{-4j\Omega} + x(5)e^{-5j\Omega} + x(6)e^{-6j\Omega} + x(7)e^{-7j\Omega}$$