

Method seems O.K. but you have made
numerical errors

(Kf)

4) With $j=0$ the 1st row is

k	1	2	3	4	5	6	7	8
j=0	(-0.60)	(-1.0)	(-1.20)	(-1.0)	(-0.20)	(2.20)	(4.40)	(0.8,0)

Using $c[1, \frac{2\pi k}{8}, 0] = (2f(\frac{2\pi k}{8}), 0)$

Using $c[1, \frac{2\pi k}{8}, j] = \begin{bmatrix} a[1, \frac{2\pi k}{8}, j] \\ -b[1, \frac{2\pi k}{8}, 1-j] \end{bmatrix} \quad j=0,1$

we have

k	0	1	2	3	4	5	6	7	
j	0	(-0.6, 0)	(-1, 0)	(-1.2, 0)	(-1, 0)	(-0.2, 0)	(2.2, 0)	(4.4, 0)	(0.8, 0)
1	(-0.6, 0)	(-1, 0)	(-1.2, 0)	(-1, 0)	(-0.2, 0)	(2.2, 0)	(4.4, 0)	(0.8, 0)	

Now calculate $m=2$ table, using

$$c[2, \frac{2\pi k}{8}, j] = \frac{1}{2} \left(c[1, \frac{2\pi k}{8}, j] + \begin{pmatrix} \cos 2\pi j & -\sin 2\pi j \\ \sin 2\pi j & \cos 2\pi j \end{pmatrix} c[1, \frac{2\pi(k+4)}{8}, j] \right)$$

The matrices for $j=0,1$ are
 $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$ respectively.

We obtain

k	0	1	2	3	4
j	0	(-0.40)	(0.60)	(1.60)	(-0.10)
1	(-0.25,0)	(-1.60)	(2.80)	(-0.90)	
2	(-0.40)	(0.60)	(1.60)	(-0.10)	

The last row was found using

$$c[2, \frac{2\pi k}{8}, 2] = \begin{bmatrix} a[2, \frac{2\pi k}{8}, 0] \\ -b[2, \frac{2\pi k}{8}, 0] \end{bmatrix}$$

Now calculate the $m=4$ table

$$\begin{pmatrix} \cos 2\pi j/m & -\sin 2\pi j/m \\ \sin 2\pi j/m & \cos 2\pi j/m \end{pmatrix} \quad j=0,1,2,3$$