1	0	7
5	1	8
4	6	9

$$f(0,1) = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[e^{-j2\pi\left[\frac{0\cdot x}{3}+\frac{1\cdot y}{3}\right]}\right] = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\, e^{-j\cdot\frac{2\pi}{3}y}$$

$$= \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[\cos\frac{2\pi}{3}y - i\sin\frac{2\pi}{3}y\right] = f(0,0)\left[\cos 0^\circ - i\sin 0^\circ\right] + f(0,1)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right]$$

$$+ f(0,2)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(1,0)\left[\cos 0^\circ - i\sin 0^\circ\right] + f(1,1)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right] +$$

$$f(1,2)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(2,0)\left[\cos 0 - i\sin 0\right] + f(2,1)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right] +$$

$$f(2,2)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] = 10 + -\frac{1}{2} - \frac{\sqrt{3}}{2}i + 24\times\left(-\frac{1}{2}+\frac{\sqrt{3}}{2}i\right) = 10 - \frac{1}{2} - 12 + 12\sqrt{3}i - \frac{\sqrt{3}}{2}i$$

$$= -2.5 + \frac{23}{2}\sqrt{3}i$$

$$f(1,1) = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[e^{-j2\pi\left[\frac{1\cdot x}{3}+\frac{1\cdot y}{3}\right]}\right] = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\, e^{-j2\pi\frac{x+y}{3}} = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[\cos\left(2\pi\frac{x+y}{3}\right) - i\sin\left(2\pi\frac{x+y}{3}\right)\right]$$

$$= f(0,0)\left[\cos 0^\circ - i\sin 0^\circ\right] + f(0,1)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right] + f(0,2)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] +$$

$$f(1,0)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right] + f(1,1)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(1,2)\left[\cos 2\pi - i\sin 2\pi\right] +$$

$$f(2,0)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(2,1)\left[\cos 2\pi - i\sin 2\pi\right] + f(2,2)\left[\cos\frac{8\pi}{3} - i\sin\frac{8\pi}{3}\right].$$

$$= 1 + 5\left(-\frac{1}{2} - \frac{\sqrt{3}}{2}i\right) + 12\times\left(-\frac{1}{2}+\frac{\sqrt{3}}{2}i\right) + 8 + 9\left(-\frac{1}{2} - \frac{\sqrt{3}}{2}i\right) = -4 - \sqrt{3}i.$$

$$f(1,2) = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[e^{-j2\pi\left[\frac{1\cdot x}{3}+\frac{2\cdot y}{3}\right]}\right] = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\, e^{-j2\pi\frac{x+2y}{3}} = \sum_{x=0}^{2}\sum_{y=0}^{2} f(x,y)\left[\cos\left(2\pi\frac{x+2y}{3}\right) - i\sin\left(2\pi\frac{x+2y}{3}\right)\right]$$

$$= f(0,0)\left[\cos 0^\circ - i\sin 0^\circ\right] + f(0,1)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(0,2)\left[\cos\frac{8\pi}{3} - i\sin\frac{8\pi}{3}\right] +$$

$$f(1,0)\left[\cos\frac{2\pi}{3} - i\sin\frac{2\pi}{3}\right] + f(1,1)\left[\cos 2\pi - i\sin 2\pi\right] + f(1,2)\left[\cos\frac{10\pi}{3} - i\sin\frac{10\pi}{3}\right] +$$

$$f(2,0)\left[\cos\frac{4\pi}{3} - i\sin\frac{4\pi}{3}\right] + f(2,1)\left[\cos\frac{8\pi}{3} - i\sin\frac{8\pi}{3}\right] + f(2,2)\left[\cos 4\pi - i\sin 4\pi\right]$$

$$= 1+1+9 + 5\left(-\frac{1}{2} - \frac{\sqrt{3}}{2}i\right) + 4\left(-\frac{1}{2}+\frac{\sqrt{3}}{2}i\right) + 7\left(-\frac{1}{2} - \frac{\sqrt{3}}{2}i\right) + 8\left(-\frac{1}{2}+\frac{\sqrt{3}}{2}i\right)$$

$$= -1.$$

$$-\frac{5\sqrt{3}}{2}i + 2\sqrt{3}i - \frac{7\sqrt{3}}{2}i + 4\sqrt{3}i \quad 1 + -\frac{5}{2} - 6 + 8 - \frac{9}{2} = 3 - 7 = -4$$

$$6\sqrt{3}i - 6\sqrt{3}i \qquad -\frac{5\sqrt{3}}{2}i + 6\sqrt{3}i - \frac{9\sqrt{3}}{2}i = -\sqrt{3}i$$

$$1+1+9 + -\frac{5}{2} - 2 - \frac{7}{2} - 4 = -1.$$

$$-6$$