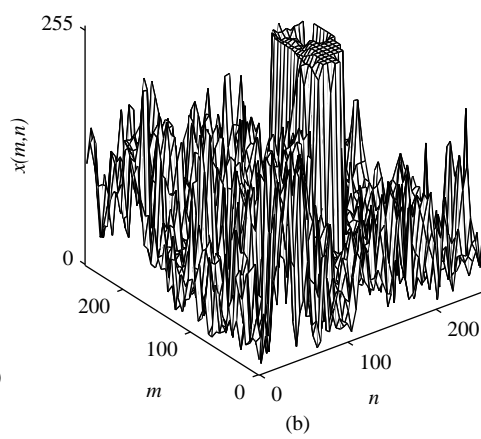
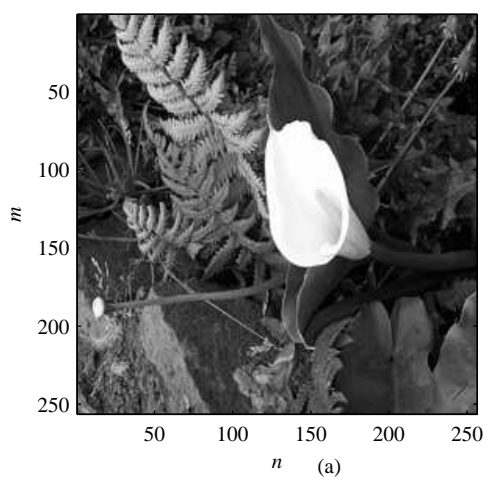


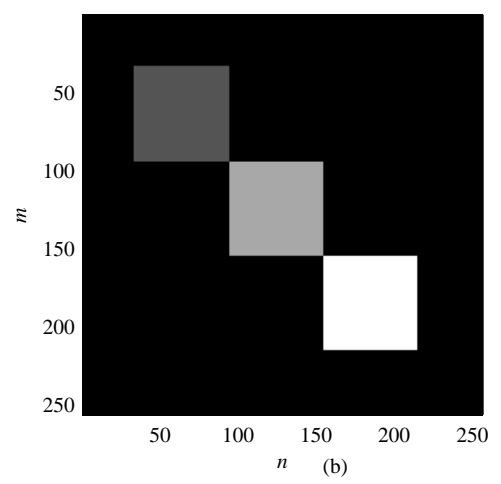
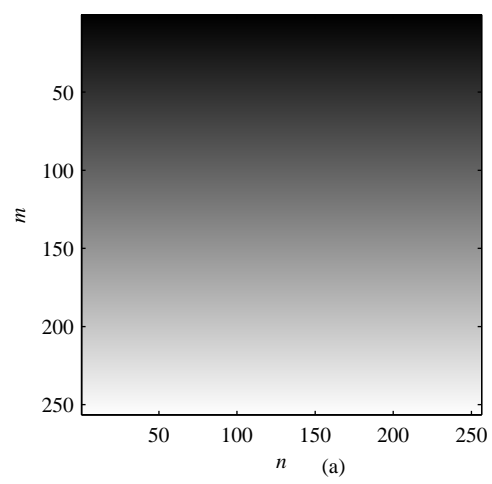
Figure slides to

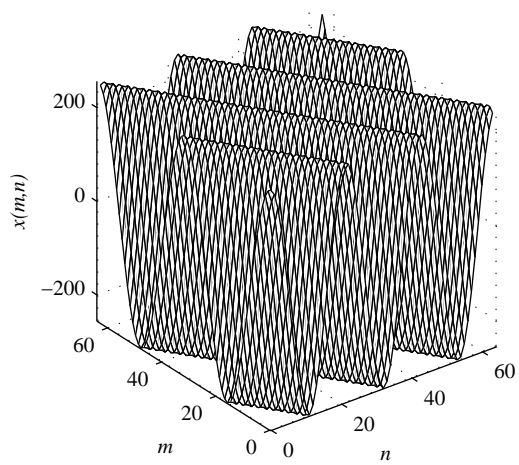
**Digital Image Processing-
A Signal Processing and Algorithmic
Approach**

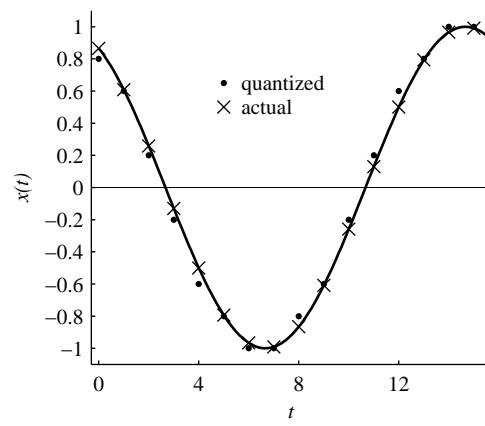
**D. Sundararajan
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8



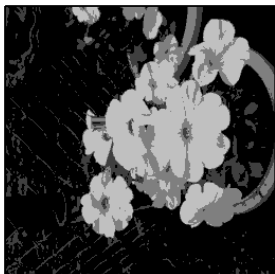
6



4



2



7



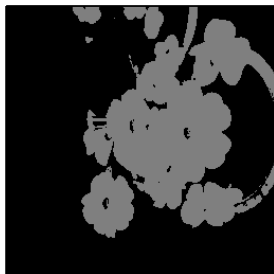
5



3



1



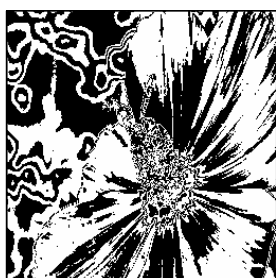
bit-plane 7:MSB



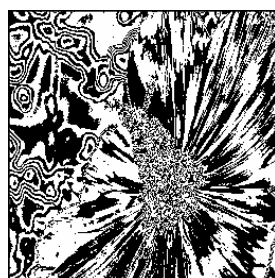
bit-plane 6



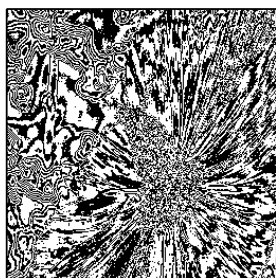
bit-plane 5



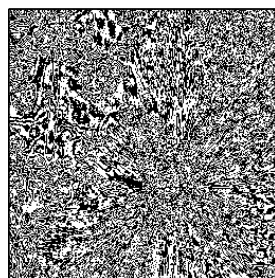
bit-plane 4



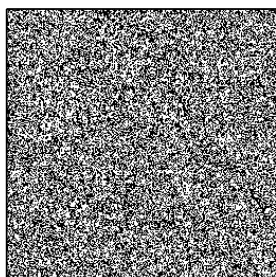
bit-plane 3



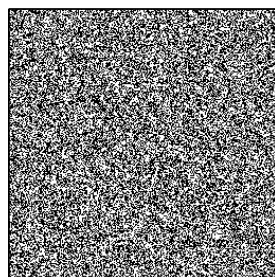
bit-plane 2

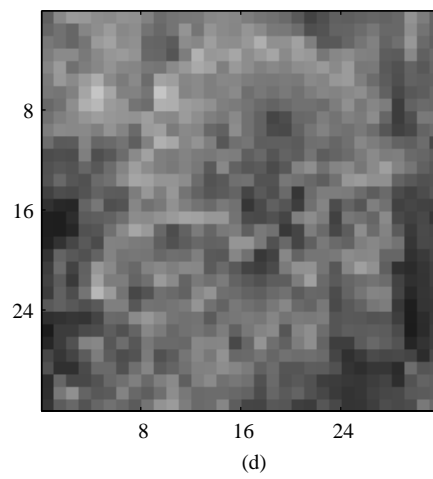
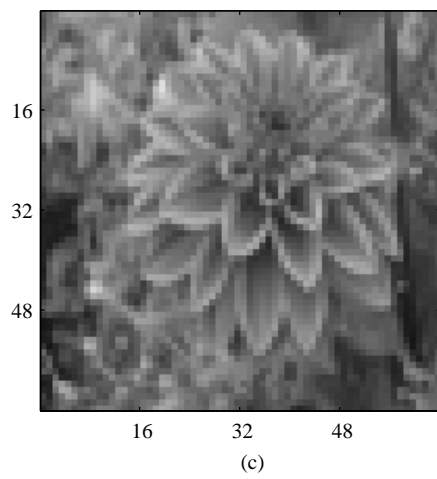
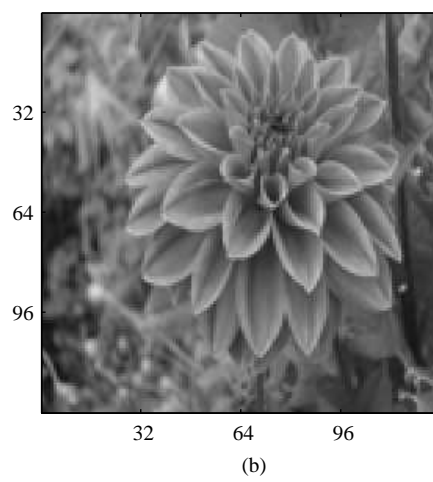
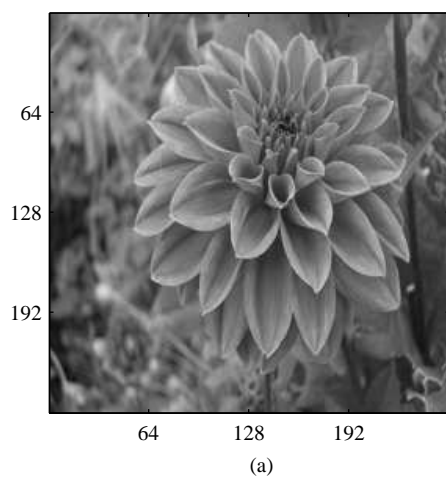


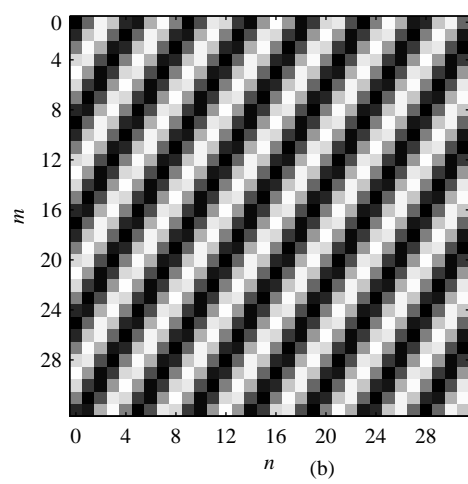
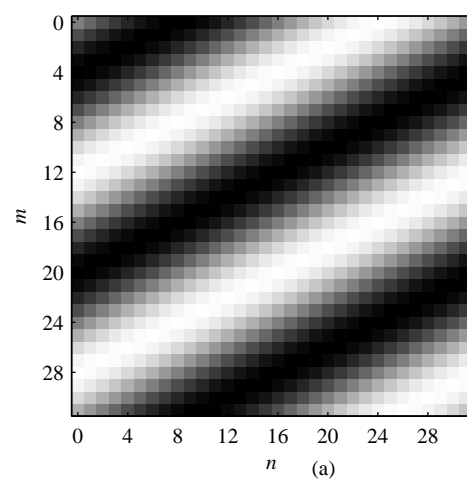
bit-plane 1



bit-plane 0:LSB









(a)



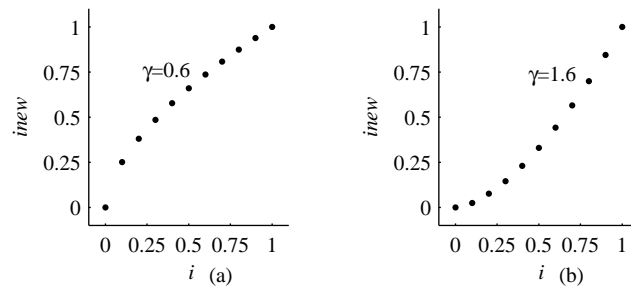
(b)



(a)



(b)

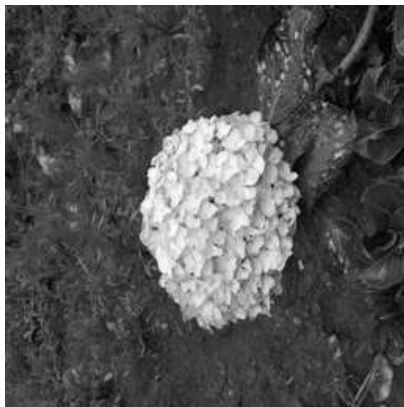




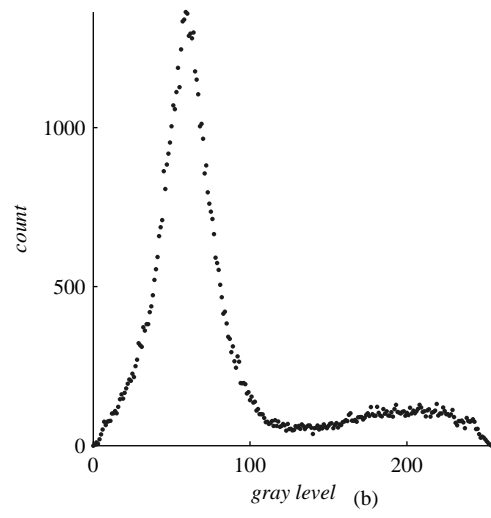
(a)



(b)



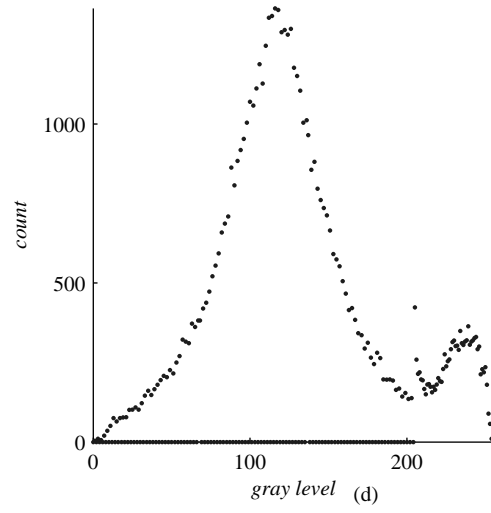
(a)



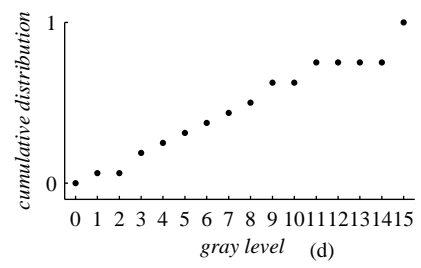
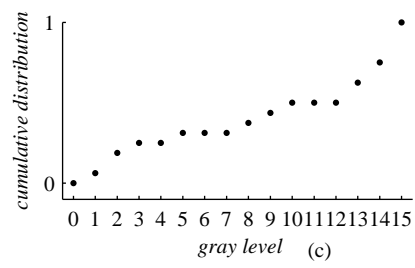
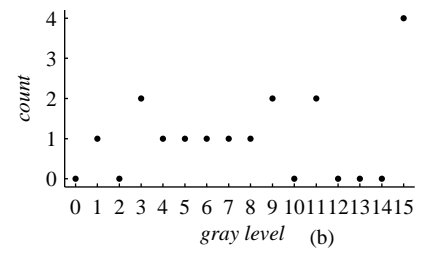
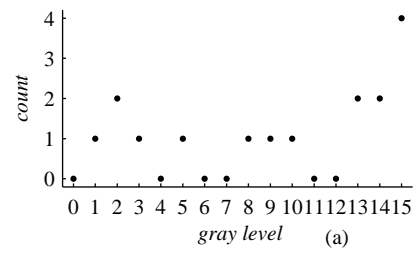
(b)

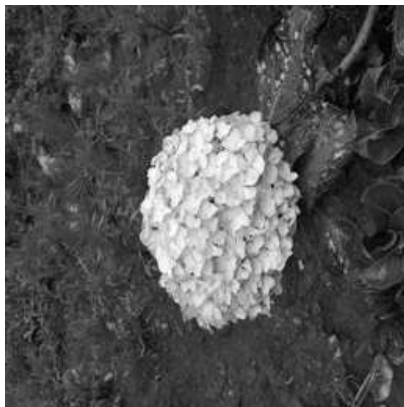


(c)

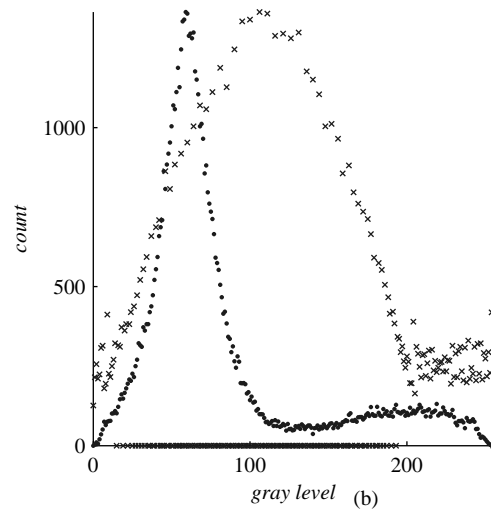


(d)

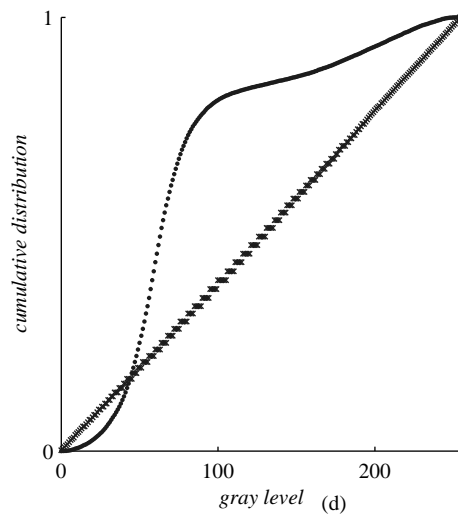


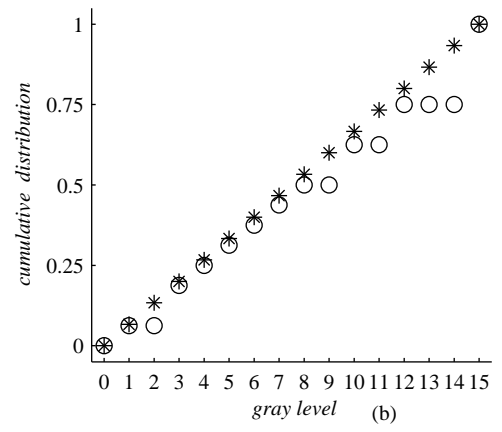
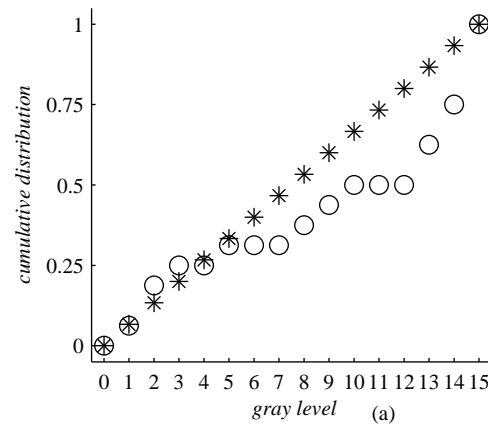


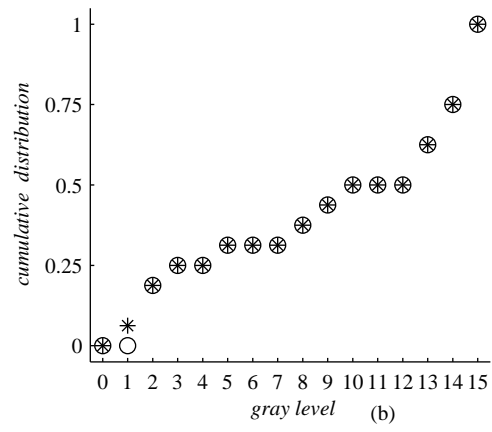
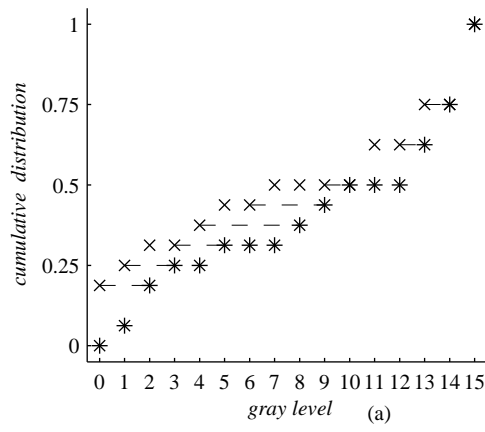
(a)

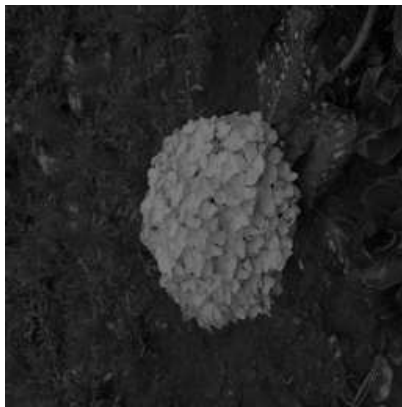


(c)

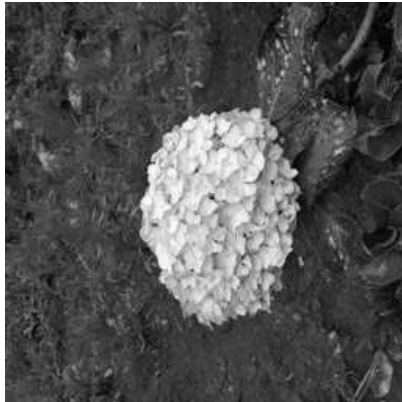
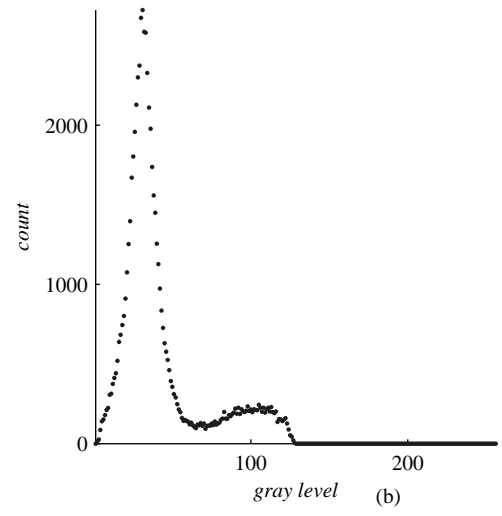




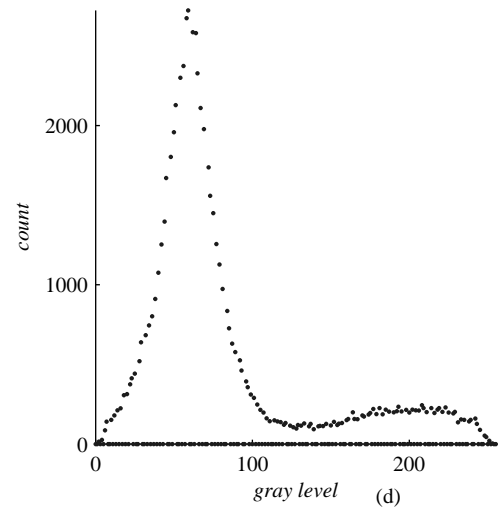


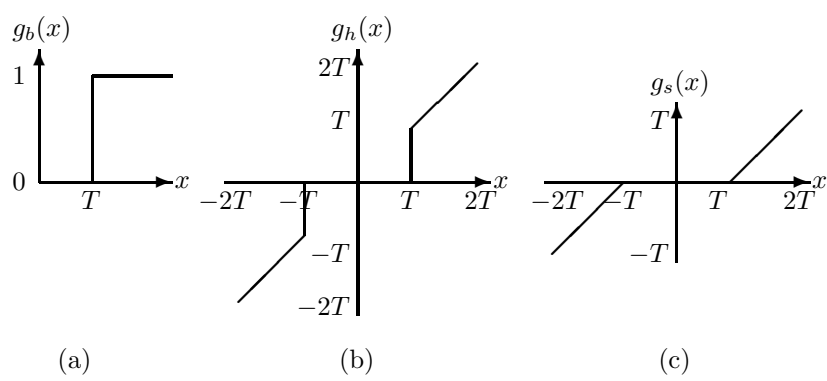


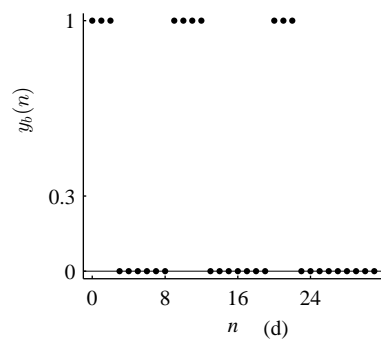
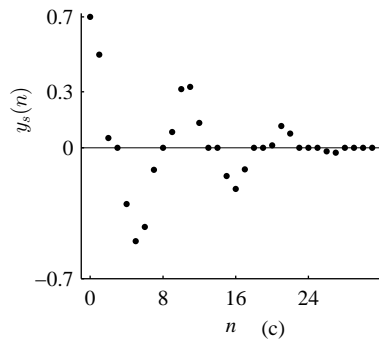
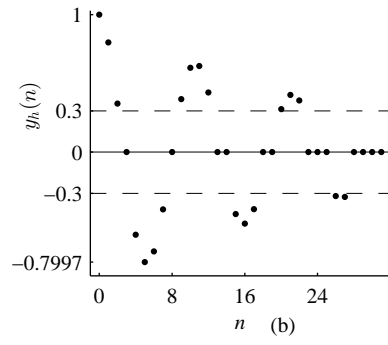
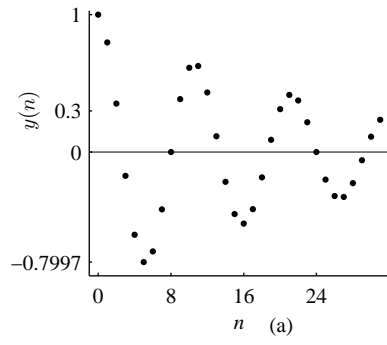
(a)



(c)





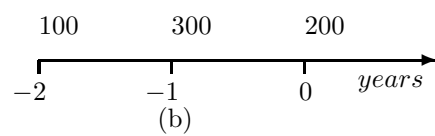
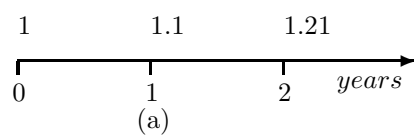




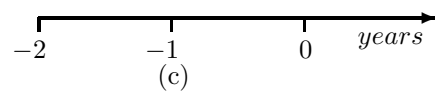
(a)



(b)

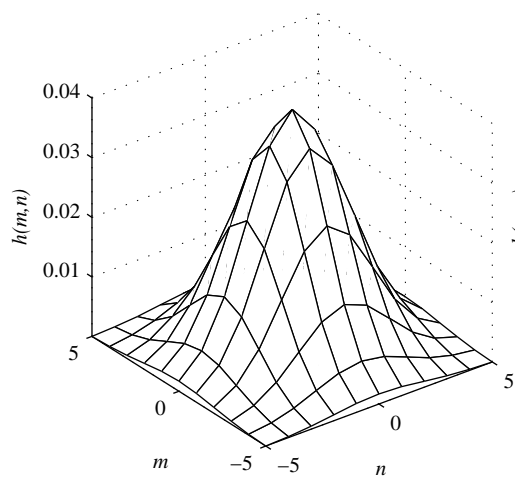


$$(100)(1.21) + (300)(1.1) + (200)(1) = 651$$

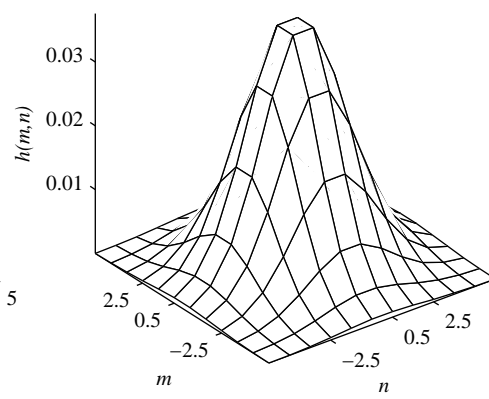


	k	0	1	2	3				
	$h(k)$	1	-2	1					
	$x(k)$	4	3	1	2				
$h(0-k)$		1	-2	1					
$h(1-k)$			1	-2	1				
$h(2-k)$				1	-2	1			
$h(3-k)$					1	-2	1		
$h(4-k)$						1	-2	1	
$h(5-k)$							1	-2	1
n		0	1	2	3	4	5		
$y(n)$		4	-5	-1	3	-3	2		

$$\begin{array}{c}
(0,0) \quad h(k,l) \quad h(k,-l) \quad h(-k,-l) \\
\begin{array}{|c|c|c|} \hline -1 & -2 & -1 \\ \hline 0 & 0 & 0 \\ \hline 1 & 2 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|} \hline -1 & -2 & -1 \\ \hline 0 & 0 & 0 \\ \hline 1 & 2 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|} \hline 1 & 2 & 1 \\ \hline 0 & 0 & 0 \\ \hline -1 & -2 & -1 \\ \hline \end{array} \\
\\
x(k,l) \quad y(m,n) \\
\begin{array}{|c|c|c|c|} \hline 1 & -1 & 3 & 2 \\ \hline 2 & 1 & 2 & 4 \\ \hline 1 & -1 & 2 & -2 \\ \hline 3 & 1 & 2 & 2 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline -1 & -1 & -2 & -7 & -7 & -2 \\ \hline -2 & -5 & -6 & -9 & -10 & -4 \\ \hline 0 & 0 & 1 & 6 & 9 & 4 \\ \hline -1 & -2 & -1 & 2 & 4 & 2 \\ \hline 1 & 1 & 1 & 1 & -2 & -2 \\ \hline 3 & 7 & 7 & 7 & 6 & 2 \\ \hline \end{array} \\
\\
y(0,0) = \sum x(k,l)h(0-k,0-l) \quad y(0,1) = \sum x(k,l)h(0-k,1-l) \\
\begin{array}{|c|c|c|c|c|c|} \hline 1 & 2 & 1 & & & \\ \hline 0 & 0 & 0 & & & \\ \hline -1 & -2 & -1 & 1 & -1 & 3 & 2 \\ \hline & & & 2 & 1 & 2 & 4 \\ \hline & & & 1 & -1 & 2 & -2 \\ \hline & & & 3 & 1 & 2 & 2 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline 1 & 2 & 1 & & & \\ \hline 0 & 0 & 0 & & & \\ \hline -1 & -2 & 1 & -1 & -1 & 3 & 2 \\ \hline & & & 2 & 1 & 2 & 4 \\ \hline & & & 1 & -1 & 2 & -2 \\ \hline & & & 3 & 1 & 2 & 2 \\ \hline \end{array} \\
\\
y(3,2) = \sum x(k,l)h(3-k,2-l) \quad y(2,1) = \sum x(k,l)h(2-k,1-l) \\
\begin{array}{|c|c|c|c|c|c|} \hline & 1 & -1 & 3 & 2 & \\ \hline 1 & 2 & 2 & 1 & 1 & 2 & 4 \\ \hline 0 & 1 & 0 & -1 & 0 & 2 & -2 \\ \hline -1 & 3 & -2 & 1 & -1 & 2 & 2 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline 1 & 2 & 1 & 1 & -1 & 3 & 2 \\ \hline 0 & 0 & 2 & 0 & 1 & 2 & 4 \\ \hline -1 & -2 & 1 & -1 & -1 & 2 & -2 \\ \hline & & & 3 & 1 & 2 & 2 \\ \hline \end{array}
\end{array}$$



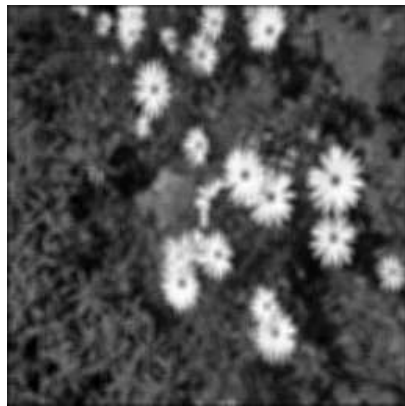
(a)



(b)



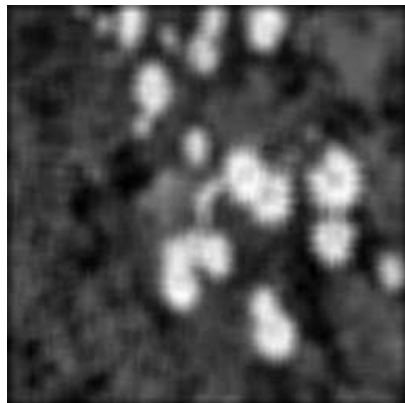
(a)



(b)



(c)



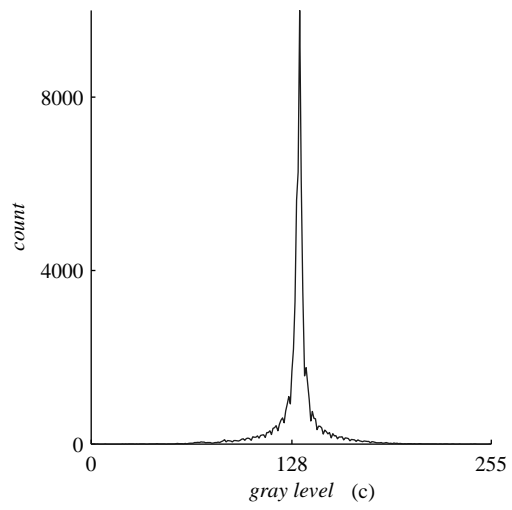
(d)



(a)



(b)



gray level (c)



(d)



(a)



(b)



(a)



(b)



(c)



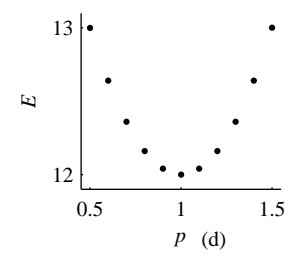
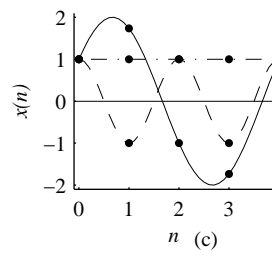
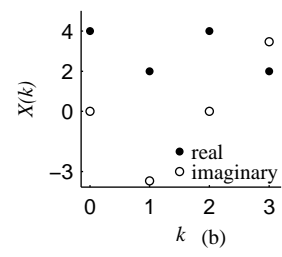
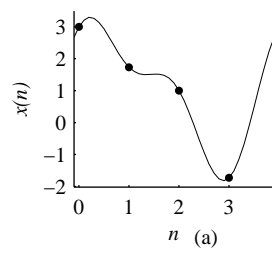
(d)

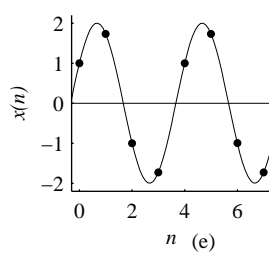
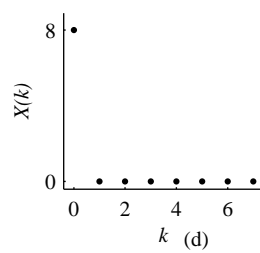
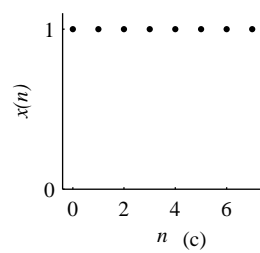
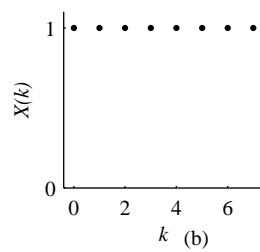
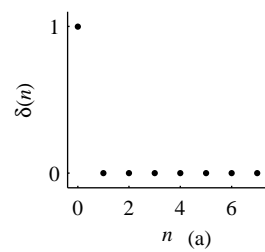


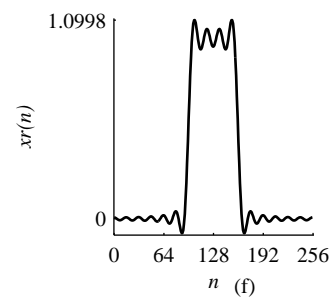
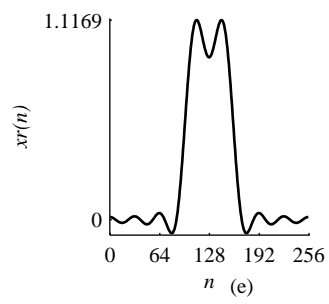
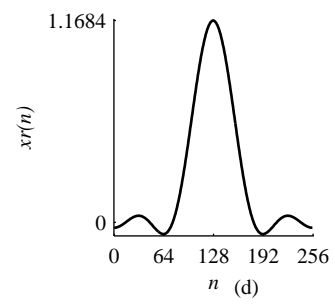
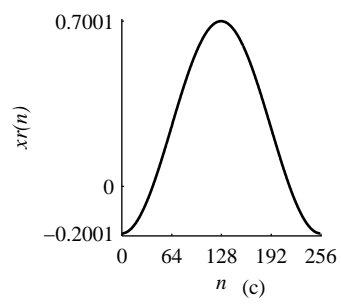
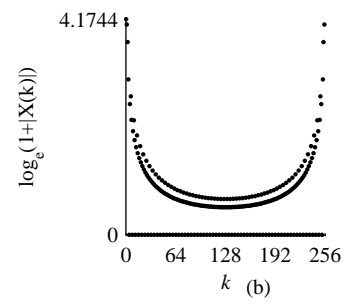
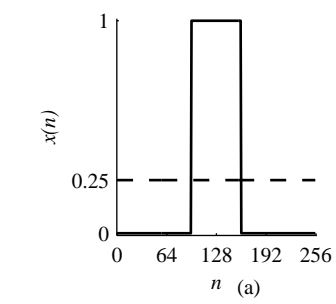
(e)

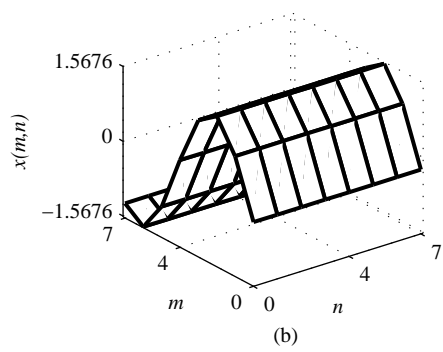
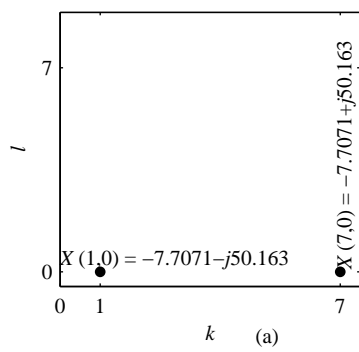


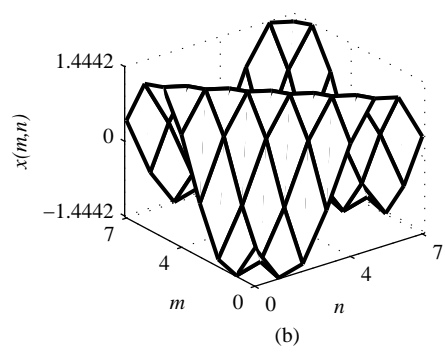
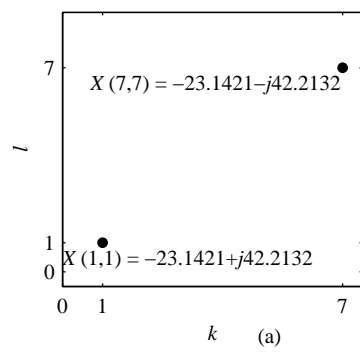
(f)

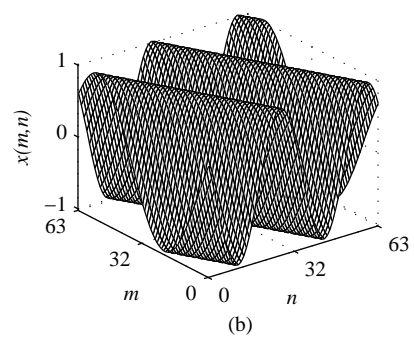
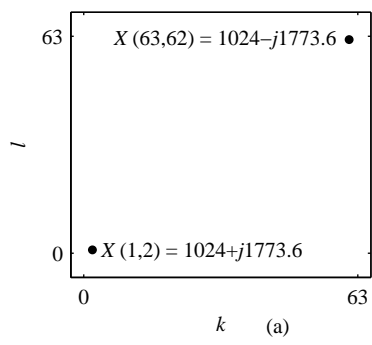


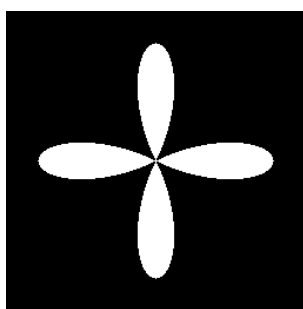




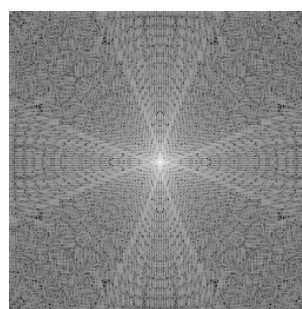




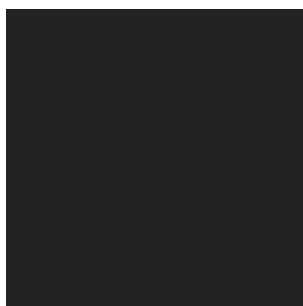




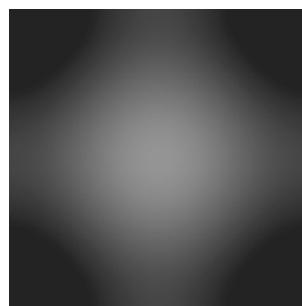
(a)



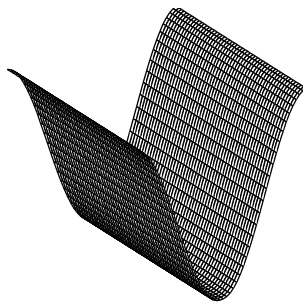
(b)



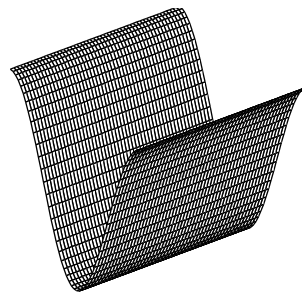
(c)



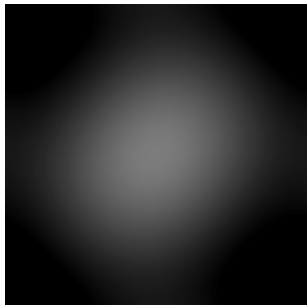
(d)



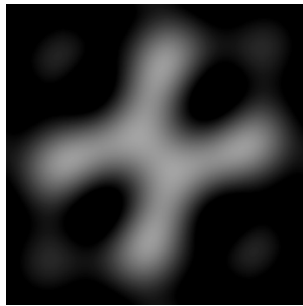
(e)



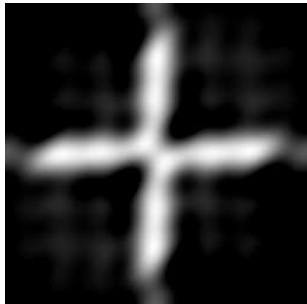
(f)



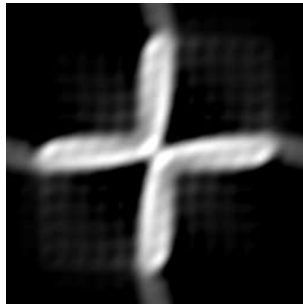
(a)



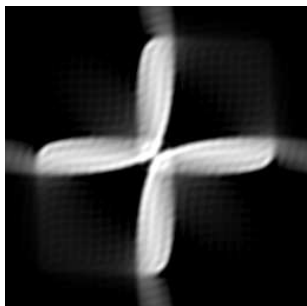
(b)



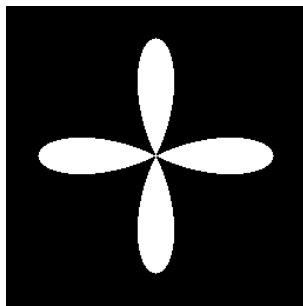
(c)



(d)

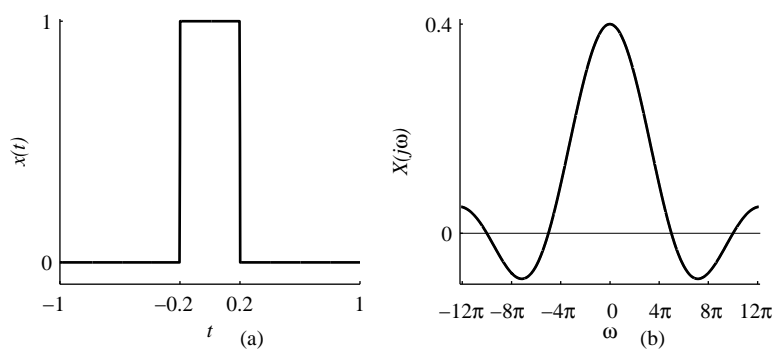


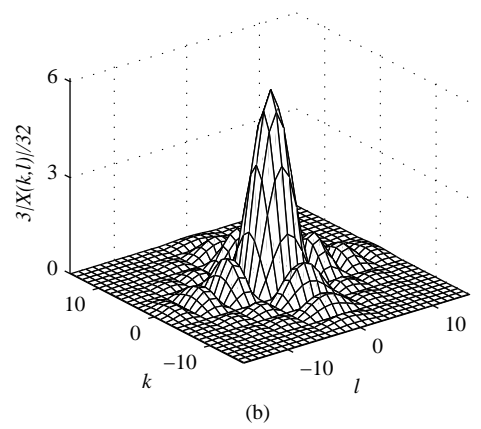
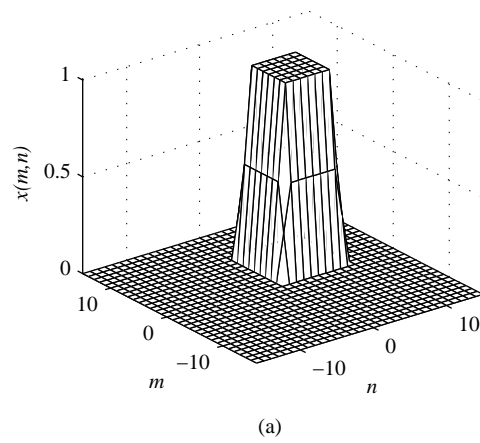
(e)

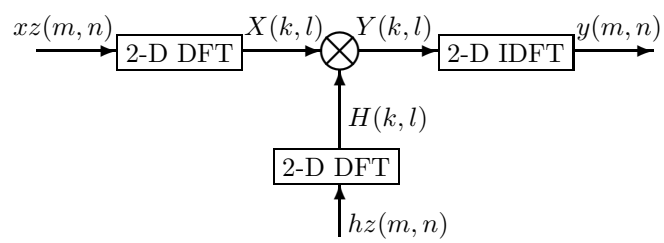


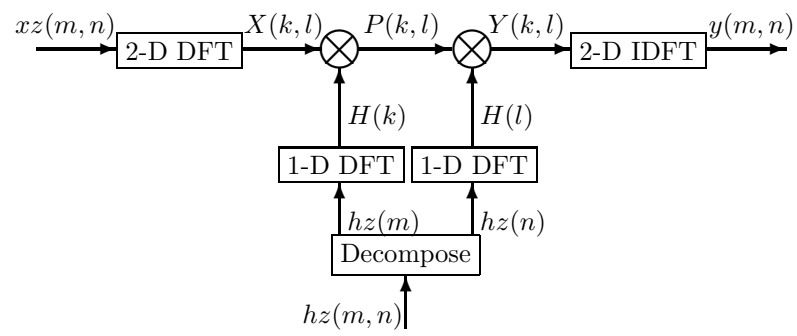
(f)

	0	1	2	3	4	5	6	7
0	$X(0,0)$	$X(0,1)$	$X(0,2)$	$X(0,3)$	$X(0,4)$	$X^*(0,3)$	$X^*(0,2)$	$X^*(0,1)$
1	$X(1,0)$	$X(1,1)$	$X(1,2)$	$X(1,3)$	$X(1,4)$	$X^*(7,3)$	$X^*(7,2)$	$X^*(7,1)$
2	$X(2,0)$	$X(2,1)$	$X(2,2)$	$X(2,3)$	$X(2,4)$	$X^*(6,3)$	$X^*(6,2)$	$X^*(6,1)$
3	$X(3,0)$	$X(3,1)$	$X(3,2)$	$X(3,3)$	$X(3,4)$	$X^*(5,3)$	$X^*(5,2)$	$X^*(5,1)$
4	$X(4,0)$	$X(4,1)$	$X(4,2)$	$X(4,3)$	$X(4,4)$	$X^*(4,3)$	$X^*(4,2)$	$X^*(4,1)$
5	$X^*(3,0)$	$X(5,1)$	$X(5,2)$	$X(5,3)$	$X^*(3,4)$	$X^*(3,3)$	$X^*(3,2)$	$X^*(3,1)$
6	$X^*(2,0)$	$X(6,1)$	$X(6,2)$	$X(6,3)$	$X^*(2,4)$	$X^*(2,3)$	$X^*(2,2)$	$X^*(2,1)$
7	$X^*(1,0)$	$X(7,1)$	$X(7,2)$	$X(7,3)$	$X^*(1,4)$	$X^*(1,3)$	$X^*(1,2)$	$X^*(1,1)$









$xz(m, n)$															
1	-1	3	2	0	0	0	0								
2	1	2	4	0	0	0	0								
1	-1	2	-2	0	0	0	0								
3	1	2	2	0	0	0	0								
0	0	0	0	0	0	0	0								
0	0	0	0	0	0	0	0								
0	0	0	0	0	0	0	0								
0	0	0	0	0	0	0	0								

$hz(m)$								$hz(n)$							
1/3								1/3	1/3	0	0	0	0	0	1/3
1/3															
0															
0															
0															
0															
0															
1/3															

$h(m, n)$			
1/9	1/9	1/9	
1/9	1/9	1/9	
1/9	1/9	1/9	



(a)



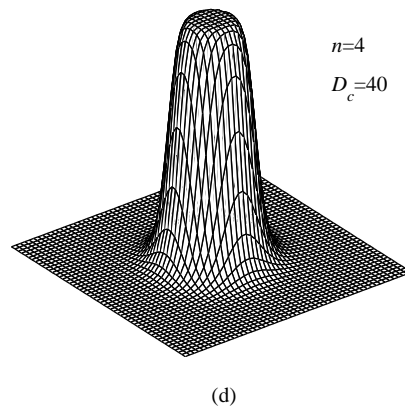
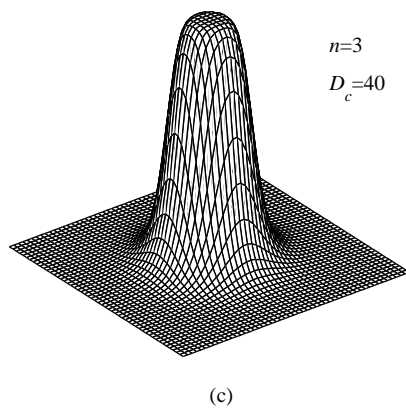
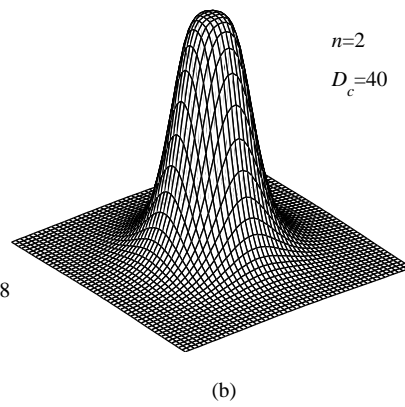
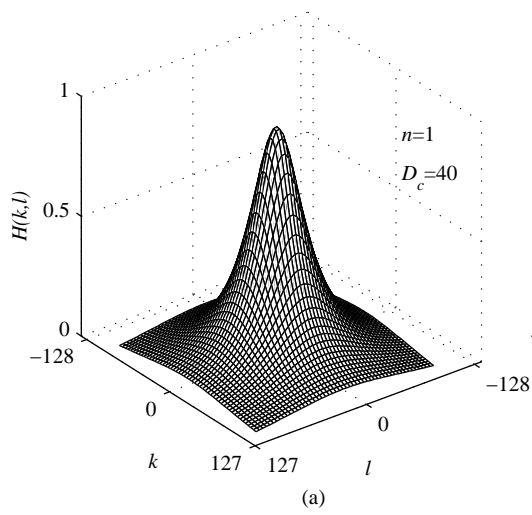
(b)

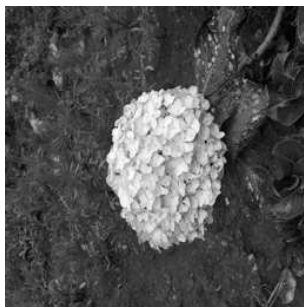


(c)

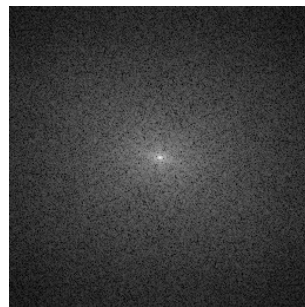


(d)

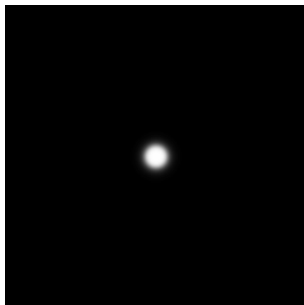




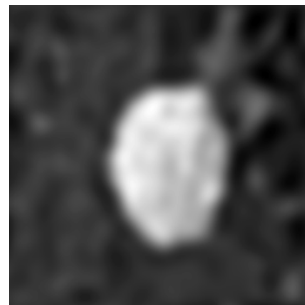
(a)



(b)



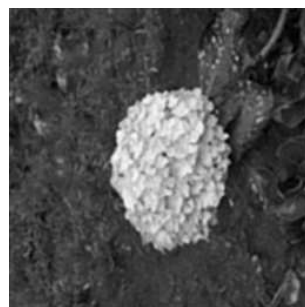
(c)



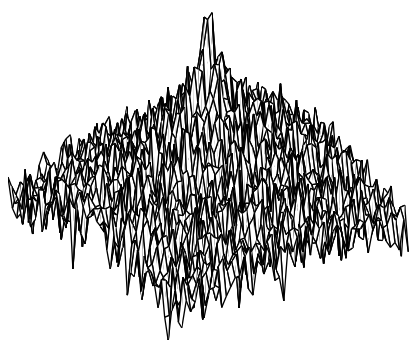
(d)



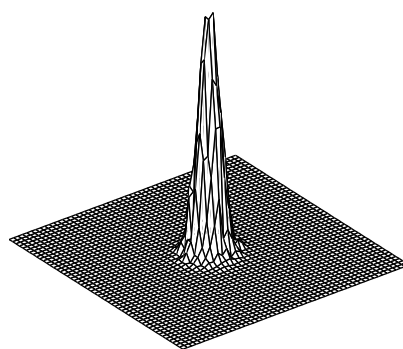
(e)



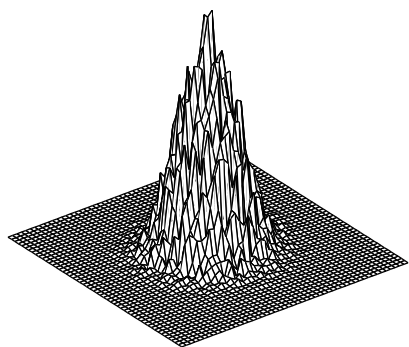
(f)



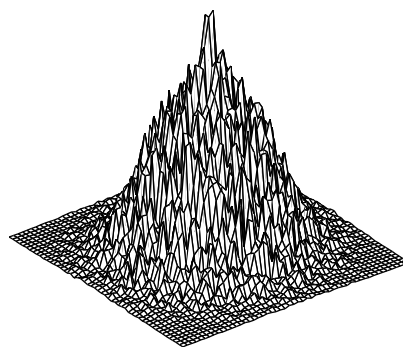
(a)



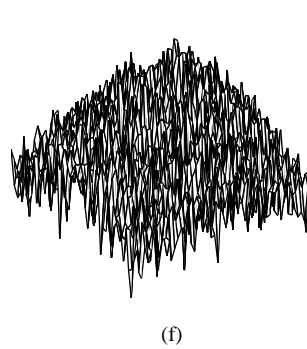
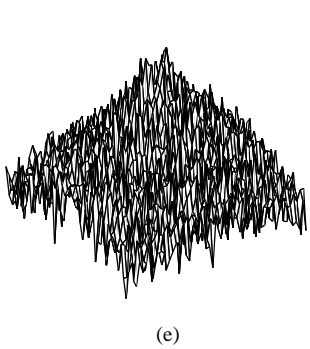
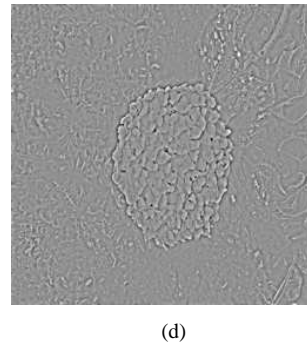
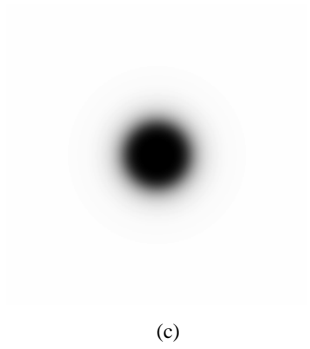
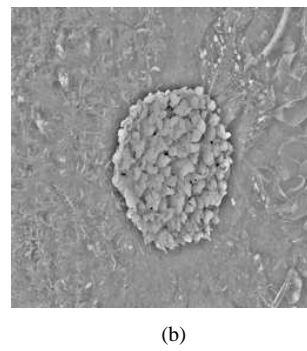
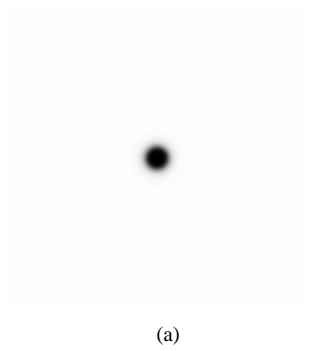
(b)

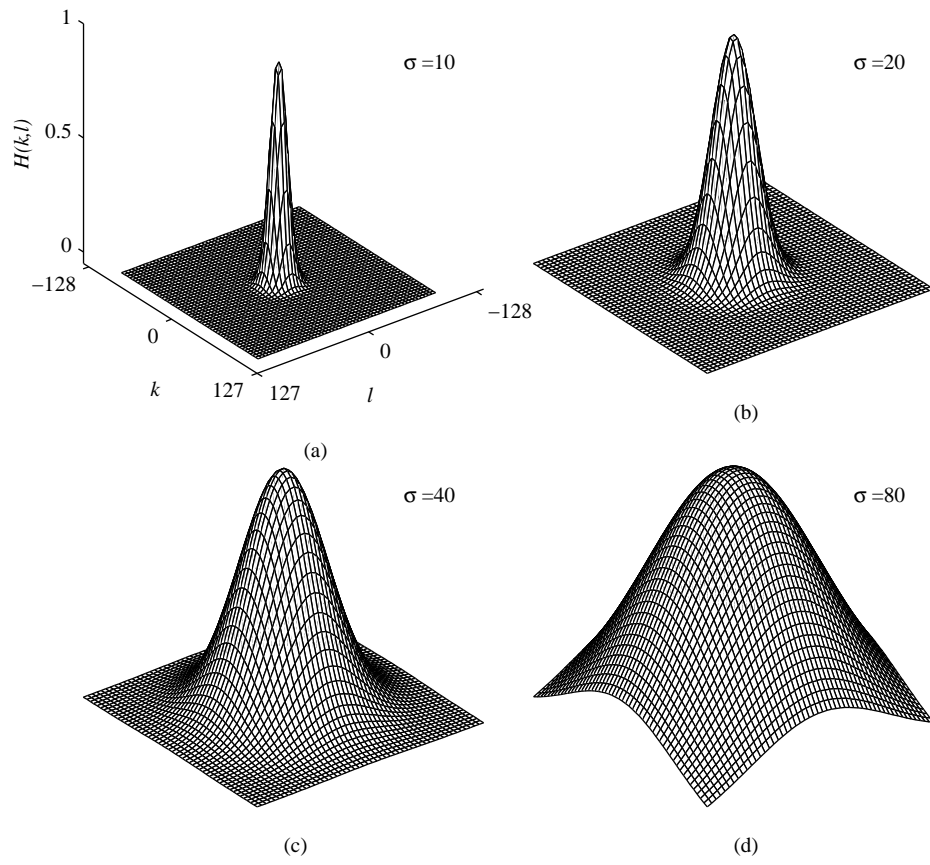


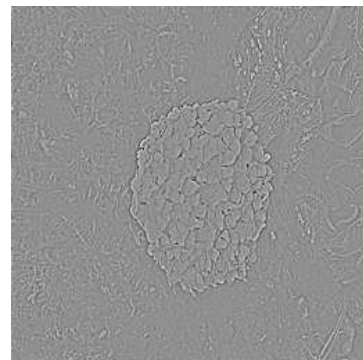
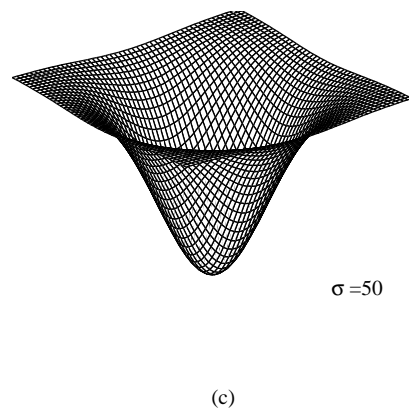
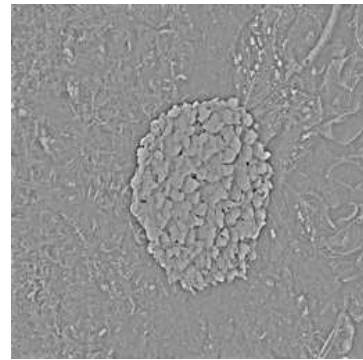
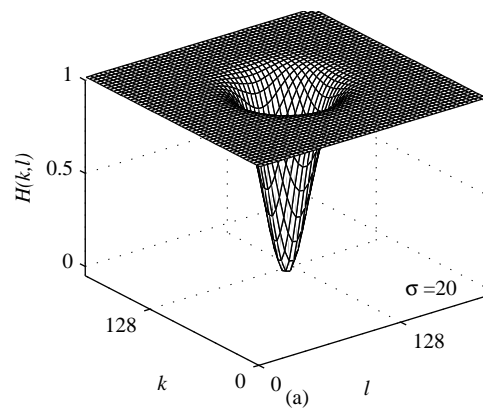
(c)



(d)





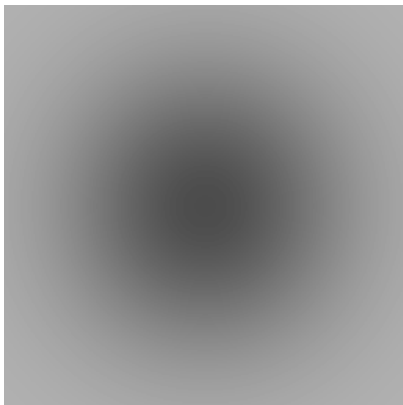




(a)



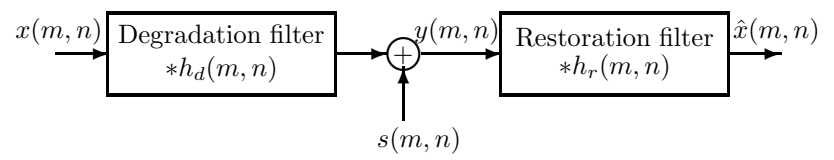
(b)

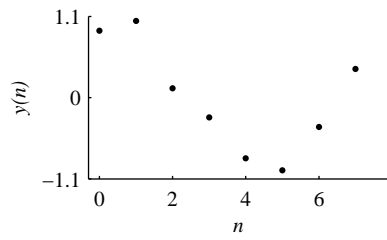


(c)

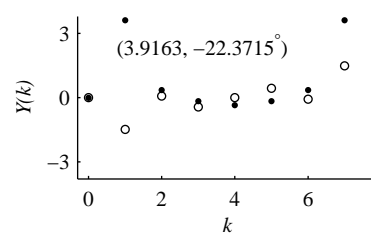


(d)

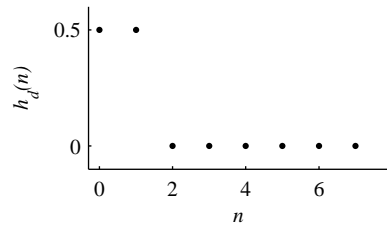




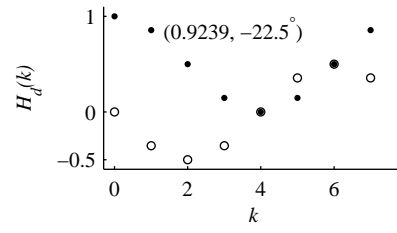
(a)



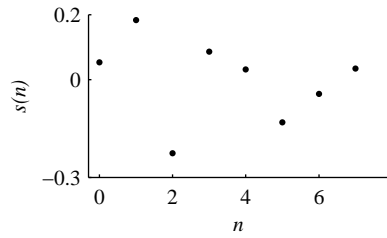
(b)



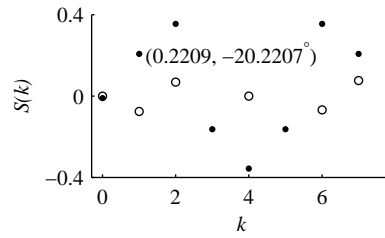
(c)



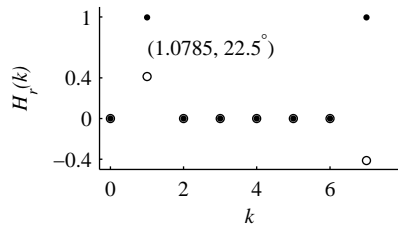
(d)



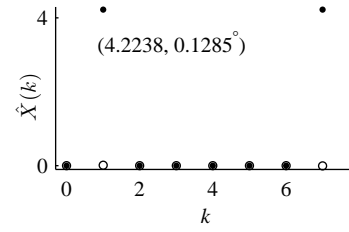
(e)



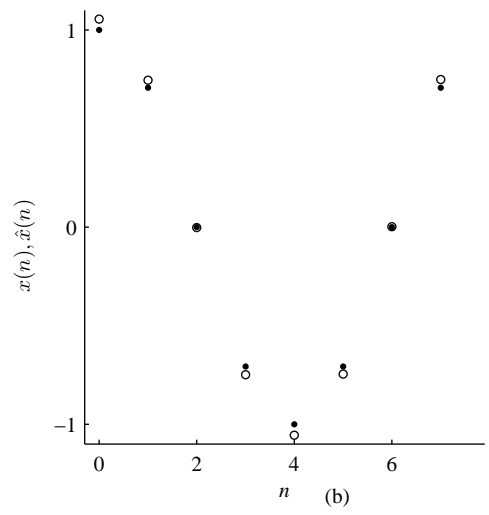
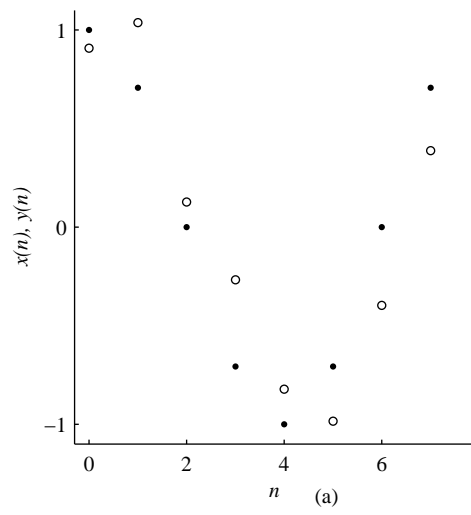
(f)

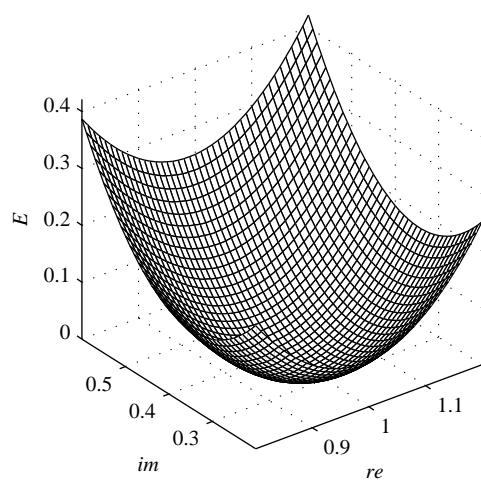


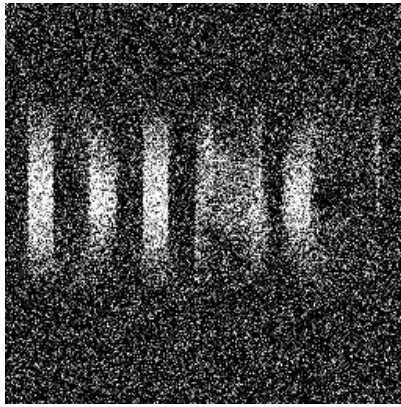
(g)



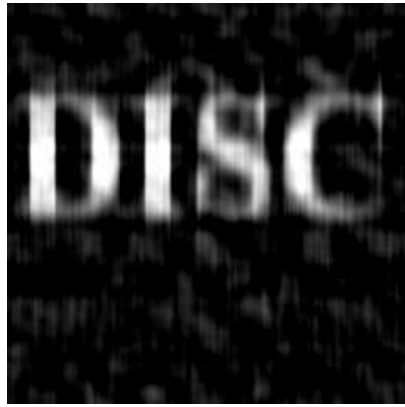
(h)



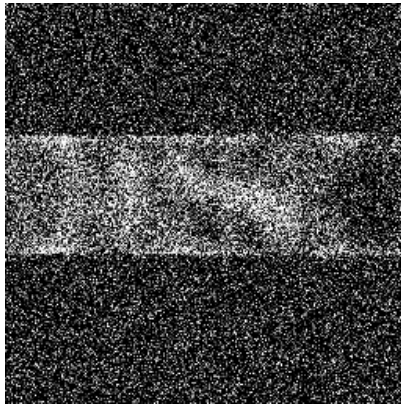




(a)



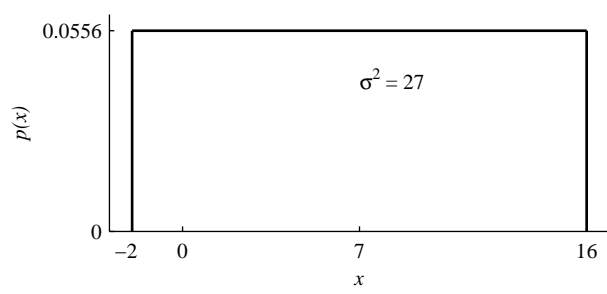
(b)

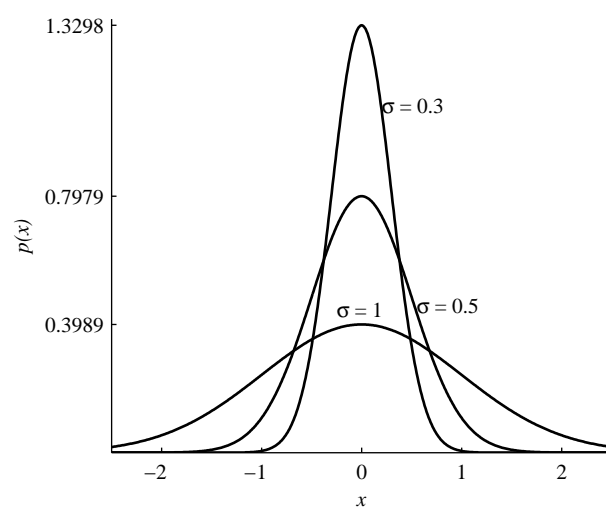


(c)



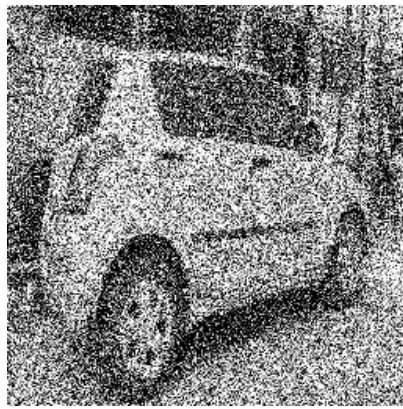
(d)







(a)



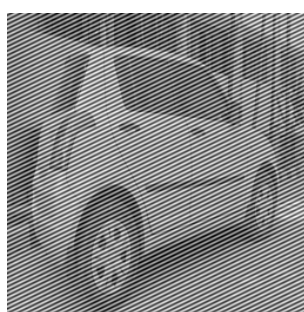
(b)



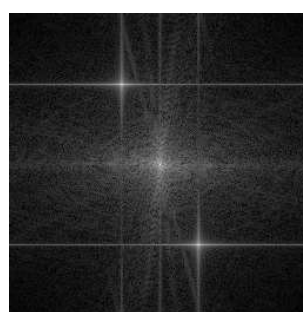
(c)



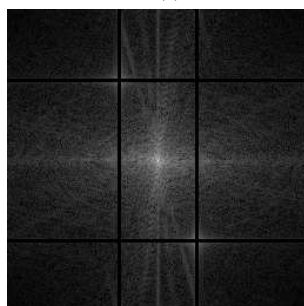
(d)



(a)



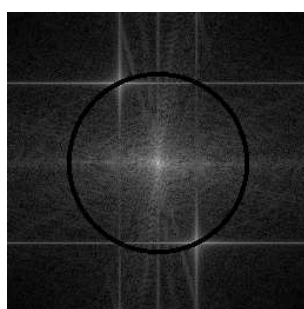
(b)



(c)



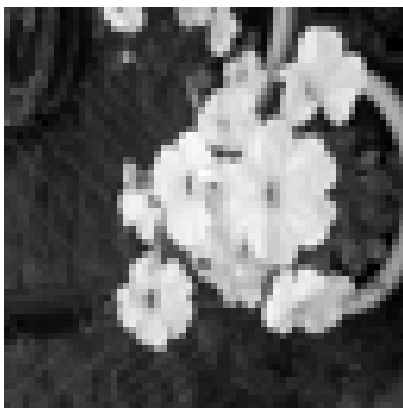
(d)



(e)



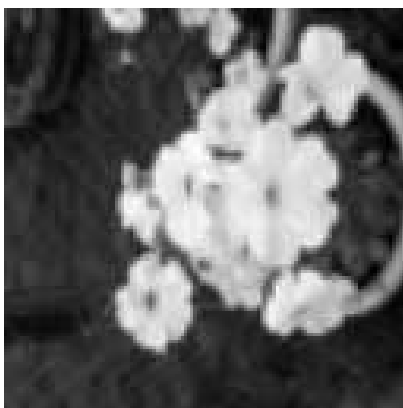
(f)



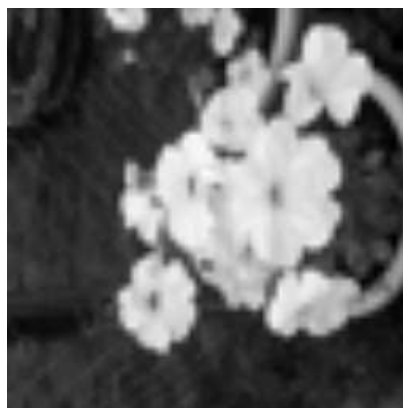
(a)



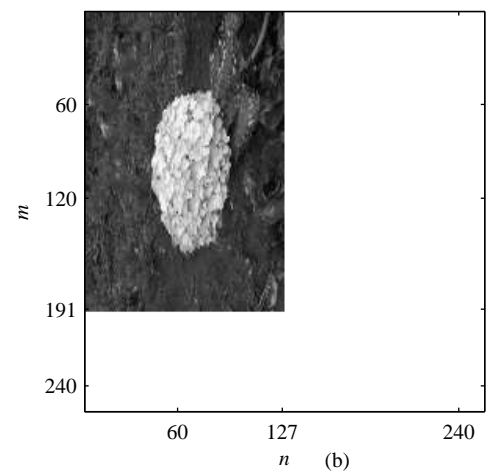
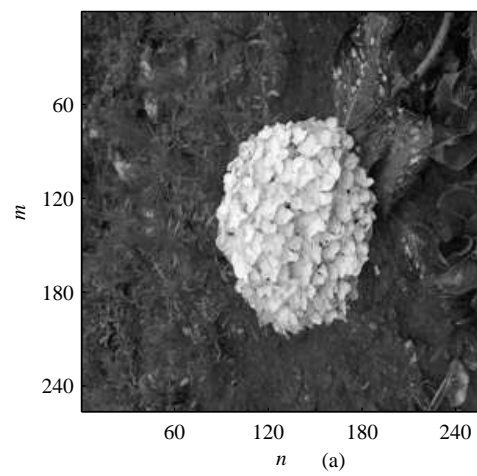
(b)

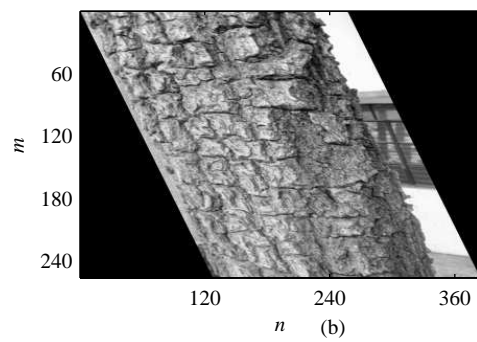
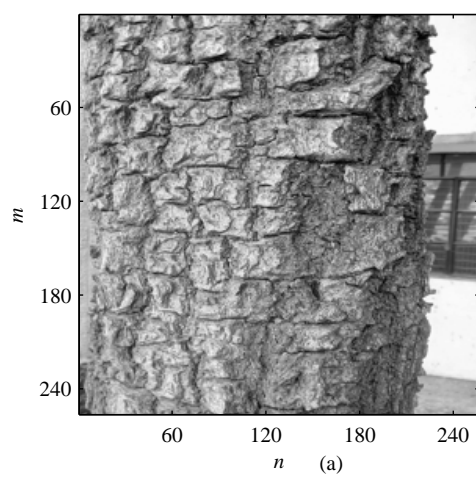


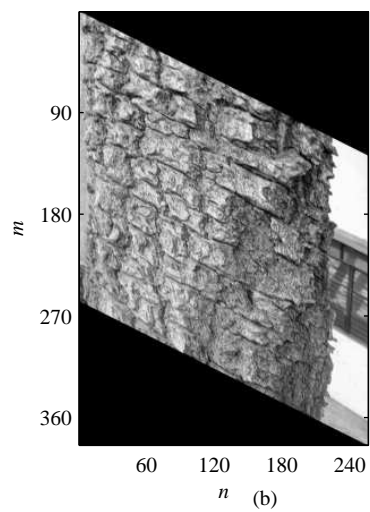
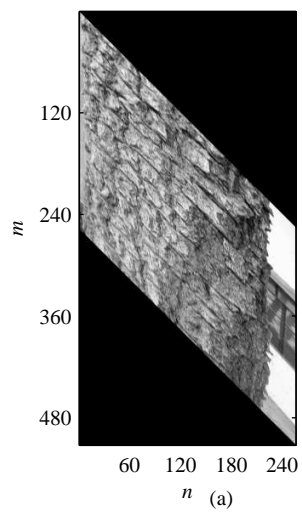
(c)

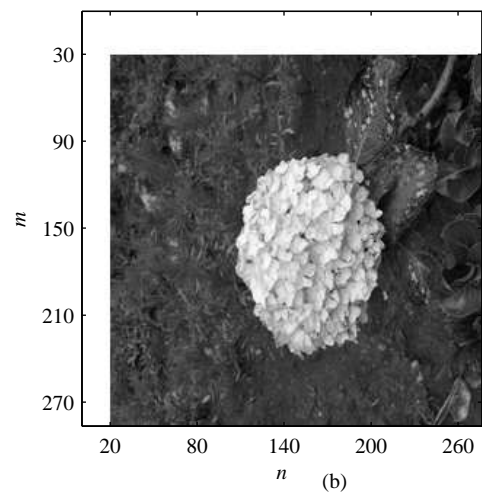
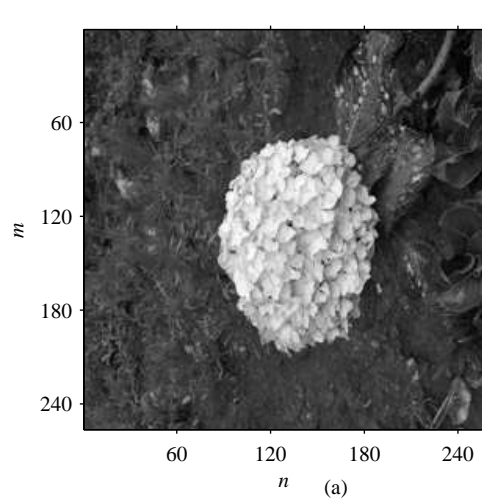


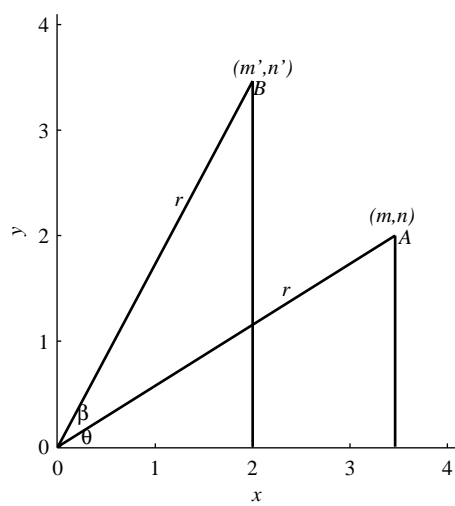
(d)

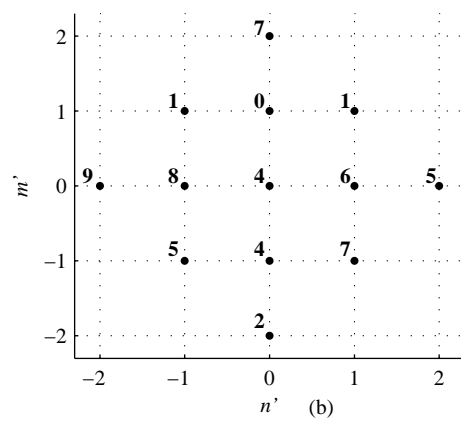
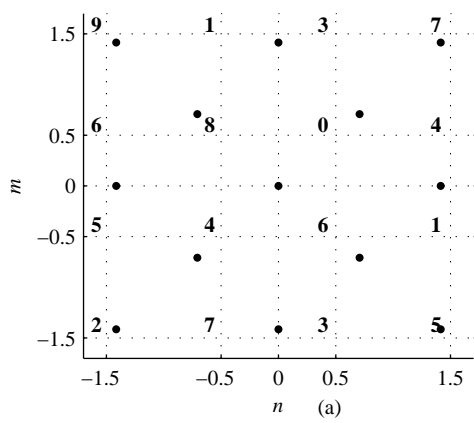












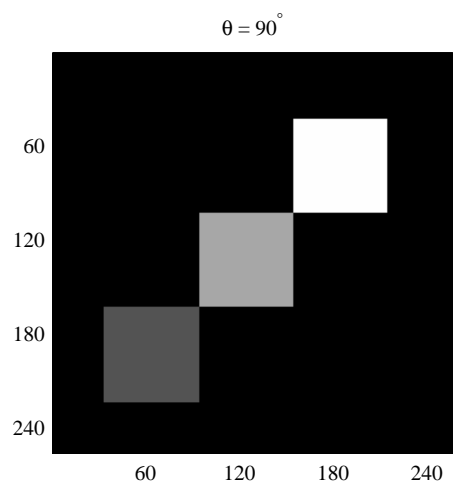
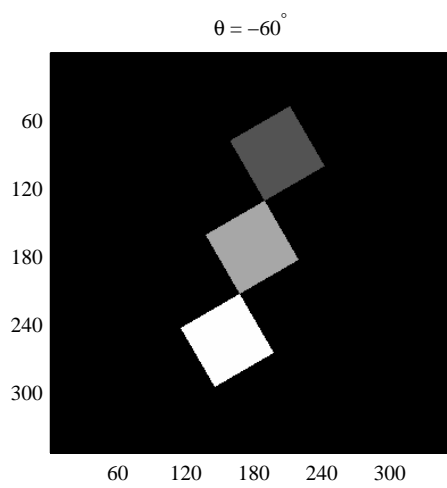
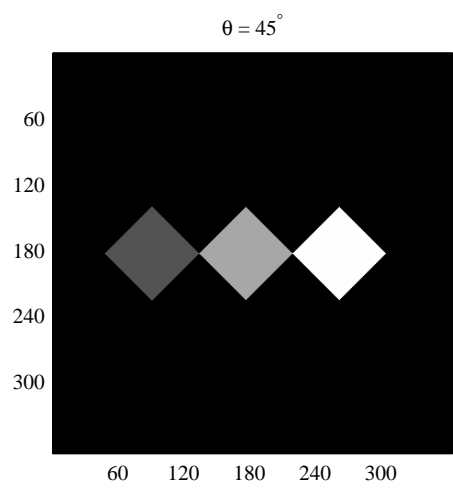
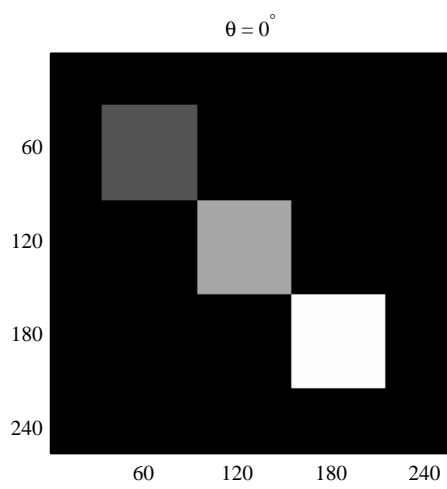
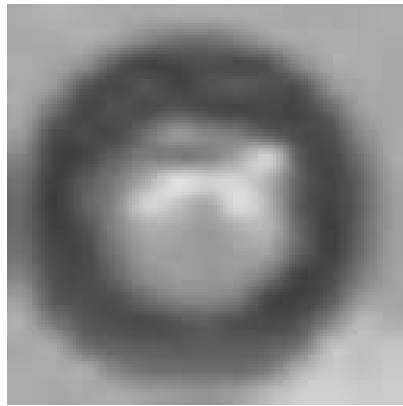


Figure 1 illustrates the construction of the matrix $r_{xy}(m)$ from the matrix $x^{(n)}$. The diagram shows a sequence of rows, each representing a row in the matrix. The rows are labeled as follows: n , $y^{(n)}$, $x^{(n)}$, $y^{(n+1)}$, $y^{(n)}$, $y^{(n-1)}$, $y^{(n-2)}$, $y^{(n-3)}$, m , and $r_{xy}(m)$. The rows are constructed by shifting the rows of $x^{(n)}$ and adding them to the previous row. The matrix $x^{(n)}$ is shown as a 4x4 grid with values 0, 1, 2, 3 in the first row, 3, -2, and two empty boxes in the second row, 2, 1, 3, 4 in the third row, and two empty boxes in the fourth row. The matrix $r_{xy}(m)$ is shown as a 5x5 grid with values -1, 0, 1, 2, 3 in the first row, -4, 4, -3, 1, 12 in the second row, and three empty boxes in the third, fourth, and fifth rows.

$$\begin{array}{c}
(0,0) \quad y(k,l) \quad (0,0) \quad x(k,l) \quad r_{xy}(m,n) \\
\begin{array}{|c|c|c|} \hline 1 & 2 & 1 \\ \hline 3 & 1 & 2 \\ \hline 1 & 0 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|} \hline 1 & -1 & 3 & 2 \\ \hline 2 & 1 & 2 & 4 \\ \hline 1 & -1 & 2 & -2 \\ \hline 3 & 1 & 2 & 2 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline 1 & -1 & 4 & 1 & 3 & 2 \\ \hline 4 & 0 & 12 & 9 & 13 & 10 \\ \hline 6 & 4 & \mathbf{16} & 17 & 19 & 12 \\ \hline 7 & 5 & 17 & 7 & 16 & 0 \\ \hline 7 & 6 & 15 & 10 & 6 & 4 \\ \hline 3 & 7 & 7 & 7 & 6 & 2 \\ \hline \end{array} \\
\\
r_{xy}(-2,-2) = \sum x(k,l)y(k+2,l+2) \quad r_{xy}(-2,-1) = \sum x(k,l)y(k+2,l+1) \\
\begin{array}{|c|c|c|} \hline 1 & 2 & 1 \\ \hline 3 & 1 & 2 \\ \hline 1 & 0 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|} \hline 1 & -1 & 3 & 2 \\ \hline 2 & 1 & 2 & 4 \\ \hline 1 & -1 & 2 & -2 \\ \hline 3 & 1 & 2 & 2 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|} \hline 1 & 2 & 1 & 1 \\ \hline 3 & 1 & 2 & 2 \\ \hline 1 & 0 & 1 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|} \hline 1 & -1 & 3 & 2 \\ \hline 2 & 1 & 2 & 4 \\ \hline 1 & -1 & 2 & -2 \\ \hline 3 & 1 & 2 & 2 \\ \hline \end{array} \\
\\
\begin{array}{|c|c|c|c|} \hline 1 & -1 & 3 & 2 \\ \hline 1 & 2 & 2 & 1 \\ \hline 3 & 1 & 1 & -1 \\ \hline 1 & 3 & 0 & 1 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|} \hline 1 & 2 & 1 & 1 \\ \hline 3 & 1 & 2 & 2 \\ \hline 1 & 0 & 1 & 1 \\ \hline 3 & 1 & 1 & 2 \\ \hline \end{array} \\
r_{xy}(1,0) = \sum x(k,l)y(k-1,l+0) \quad r_{xy}(0,-1) = \sum x(k,l)y(k+0,l+1)
\end{array}$$



(a)



(b)



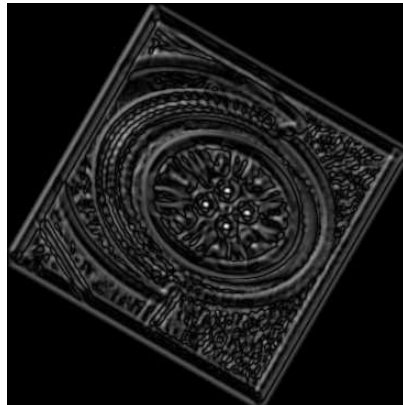
(c)



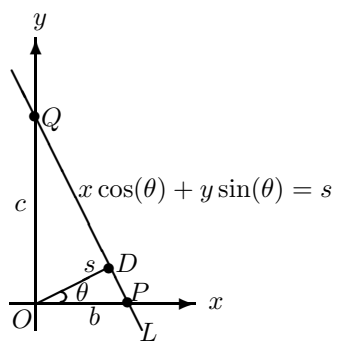
(d)

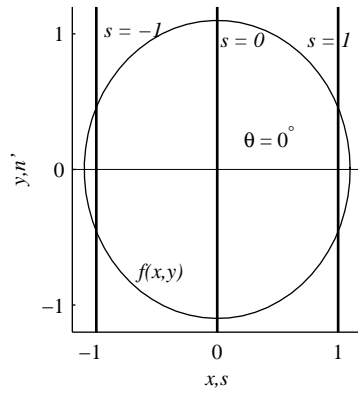


(a)

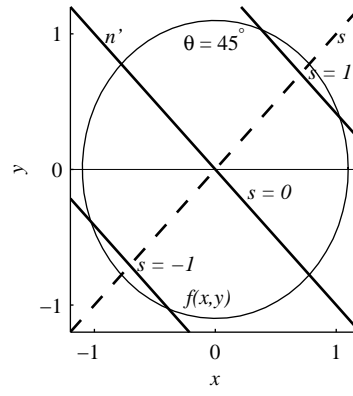


(b)

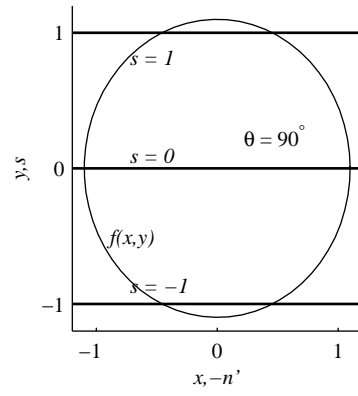




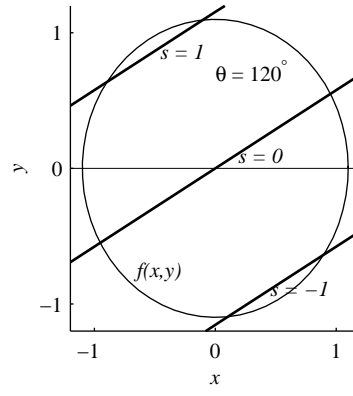
(a)



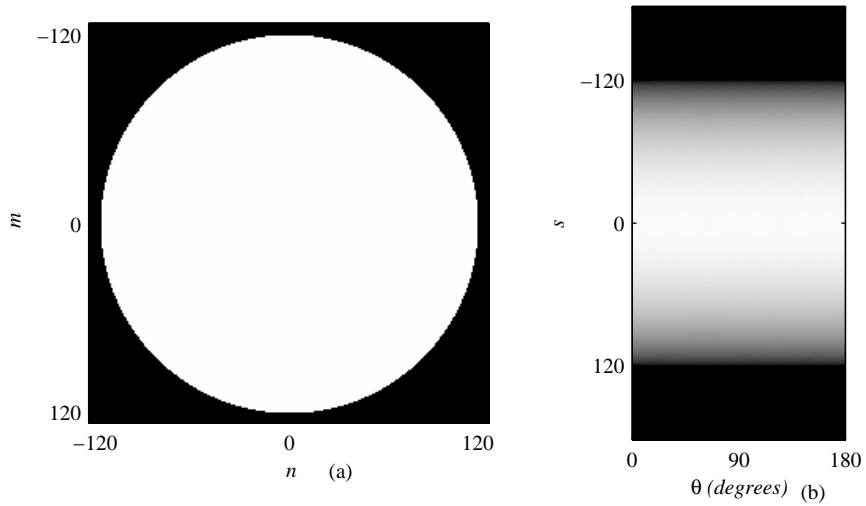
(b)

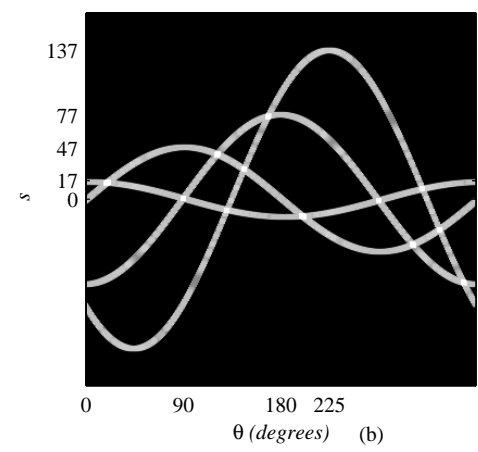
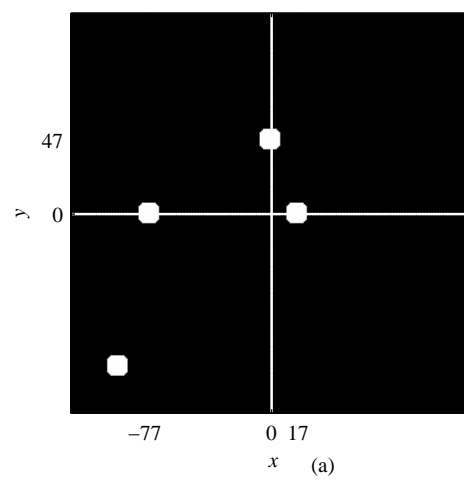


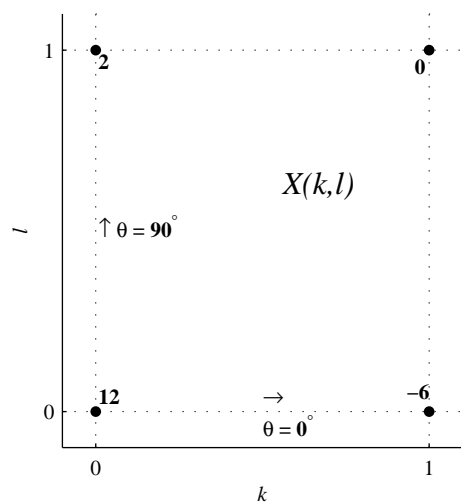
(c)

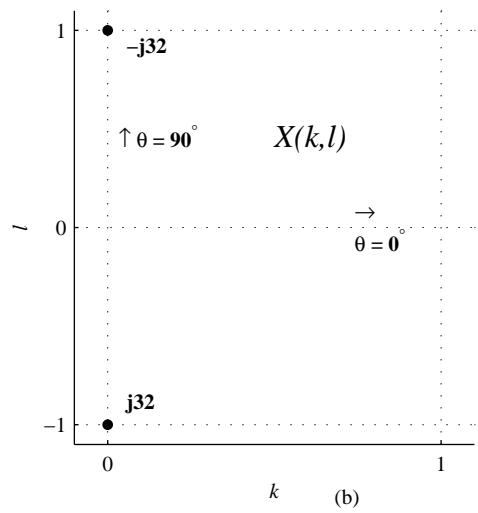
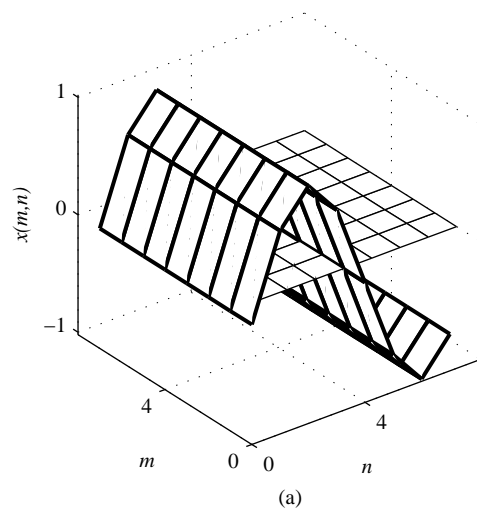


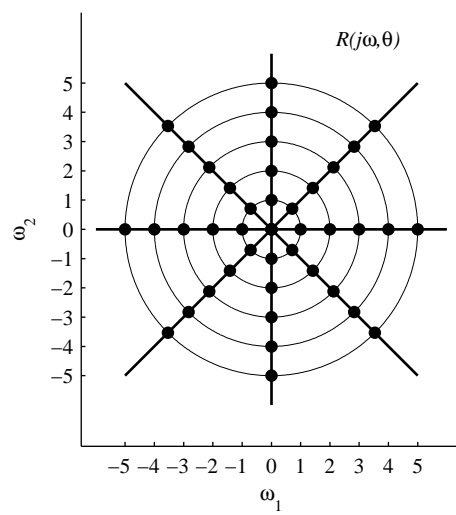
(d)

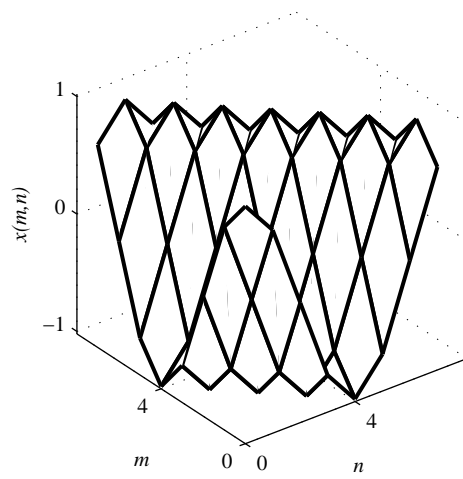




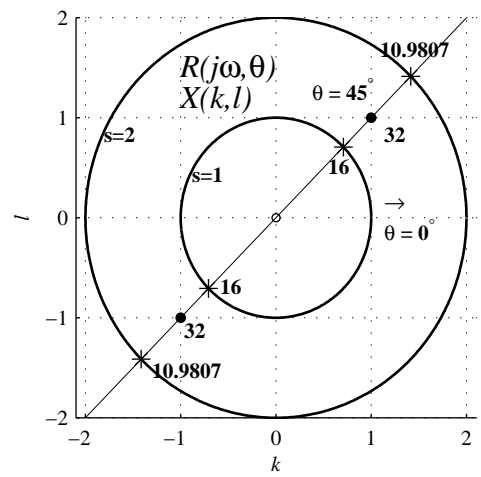




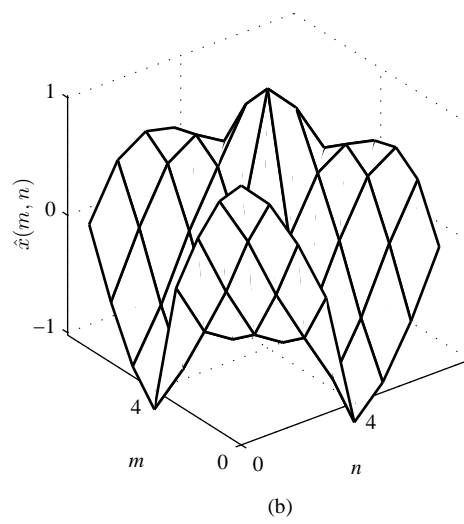
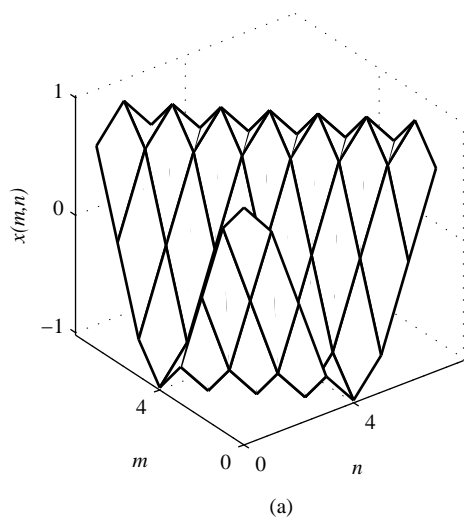


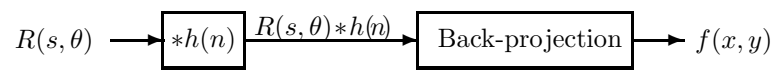


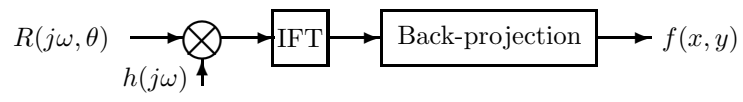
(a)

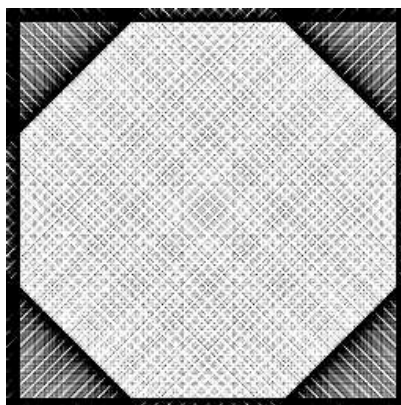


(b)

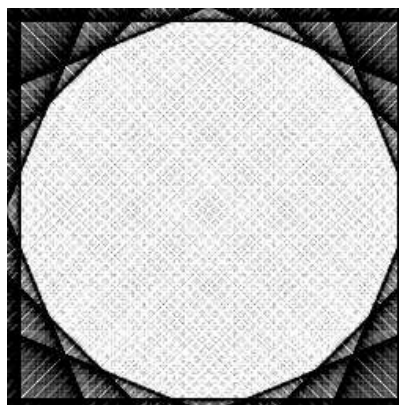




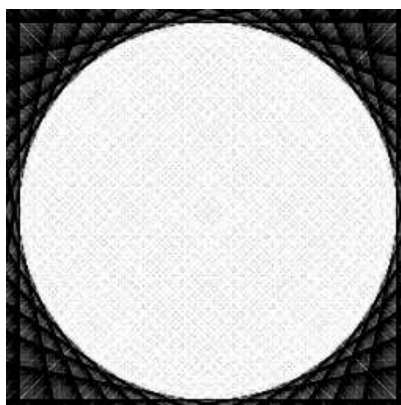




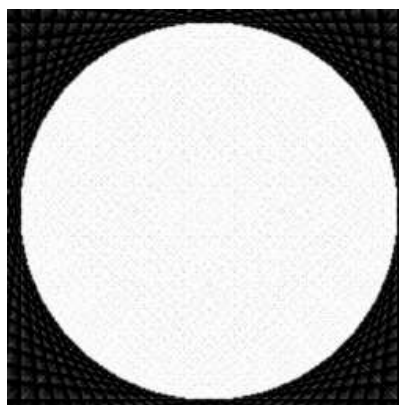
(a)



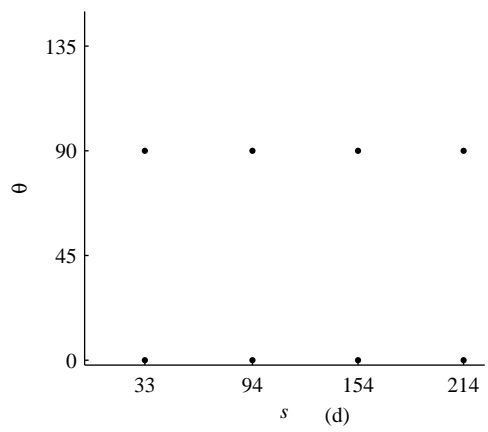
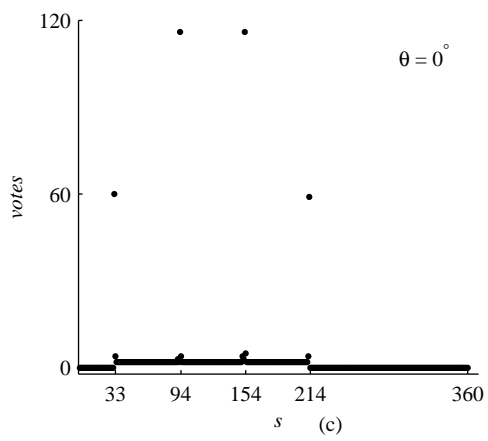
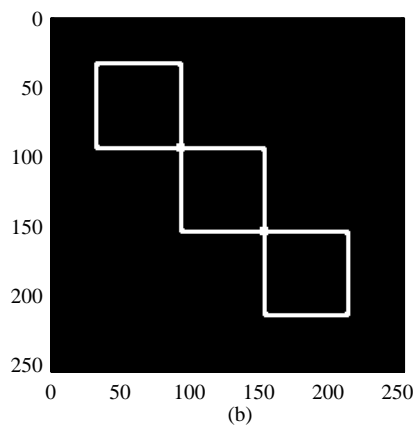
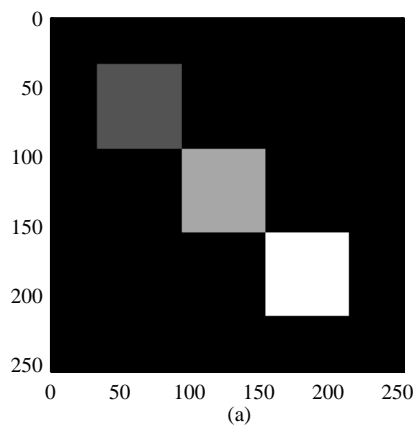
(b)



(c)



(d)

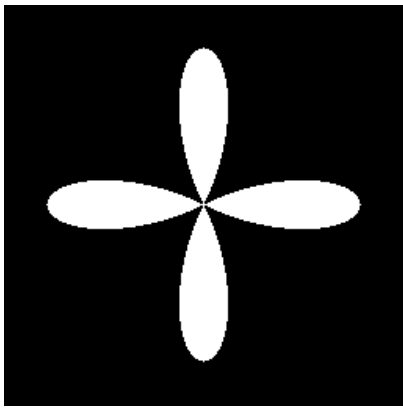


$$\begin{array}{l}
h(n) \boxed{1 \mid 1 \mid 0} \\
x(n) \boxed{0 \mid 1 \mid 1 \mid 1 \mid 0 \mid 0 \mid 1 \mid 0} \\
h(-k) \boxed{0 \mid 1 \mid 1} \\
h(1-k) \boxed{0 \mid 1 \mid 1} \\
h(2-k) \quad \boxed{0 \mid 1 \mid 1} \\
h(3-k) \quad \quad \boxed{0 \mid 1 \mid 1} \\
h(4-k) \quad \quad \quad \boxed{0 \mid 1 \mid 1} \\
h(5-k) \quad \quad \quad \quad \boxed{0 \mid 1 \mid 1} \\
y(n) = x(n) \oplus h(n), \quad n = 0, 1, 2, 3, 4, 5 \\
\quad \quad \quad \boxed{1 \mid 1 \mid 1 \mid 0 \mid 1 \mid 1}
\end{array}$$

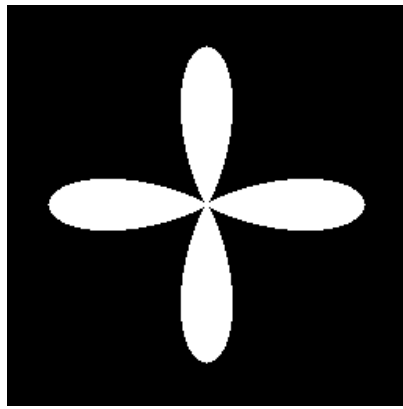
(a)

$$\begin{array}{l}
h(n) \boxed{1 \mid 1 \mid 0} \\
x(n) \boxed{1 \mid 1 \mid 1 \mid 1 \mid 0 \mid 0 \mid 1 \mid 1} \\
h(k) \boxed{1 \mid 1 \mid 0} \\
h(k-1) \boxed{1 \mid 1 \mid 0} \\
h(k-2) \quad \boxed{1 \mid 1 \mid 0} \\
h(k-3) \quad \quad \boxed{1 \mid 1 \mid 0} \\
h(k-4) \quad \quad \quad \boxed{1 \mid 1 \mid 0} \\
h(k-5) \quad \quad \quad \quad \boxed{1 \mid 1 \mid 0} \\
y(n) = x(n) \ominus h(n), \quad n = 0, 1, 2, 3, 4, 5 \\
\quad \quad \quad \boxed{1 \mid 1 \mid 1 \mid 0 \mid 0 \mid 0}
\end{array}$$

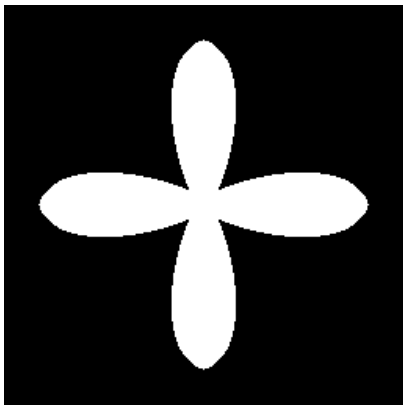
(b)



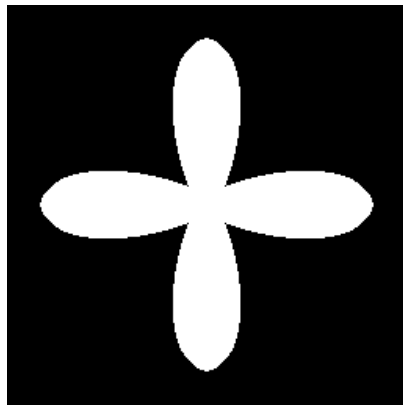
(a)



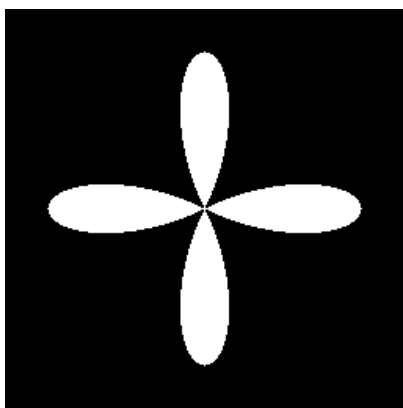
(b)



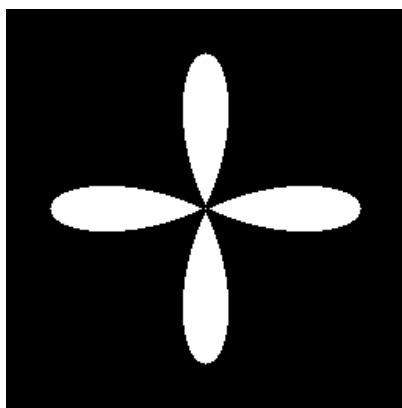
(c)



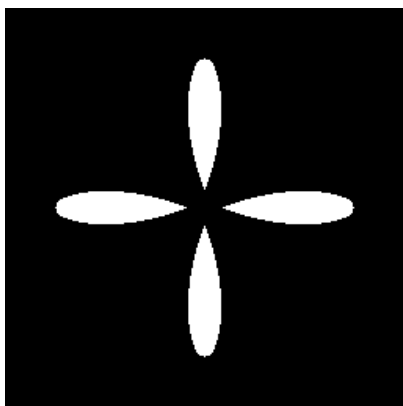
(d)



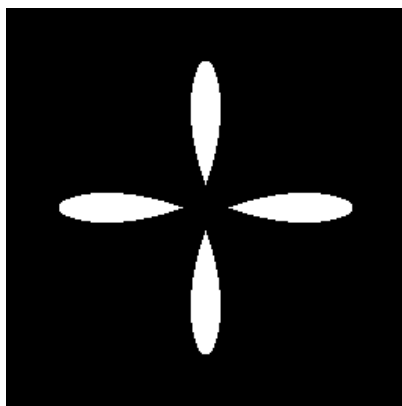
(a)



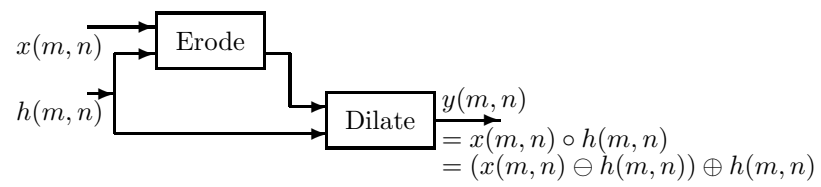
(b)

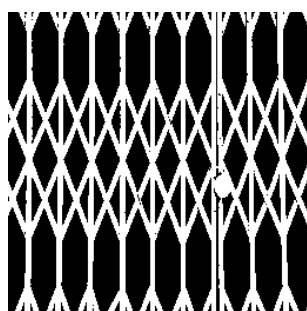


(c)

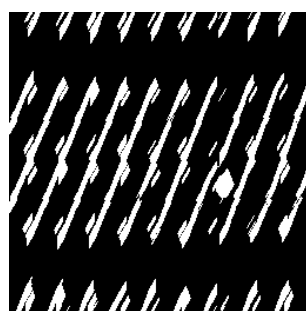


(d)

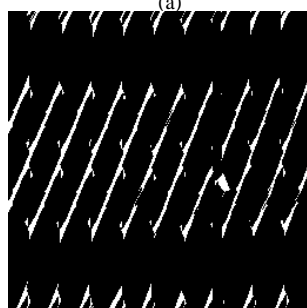




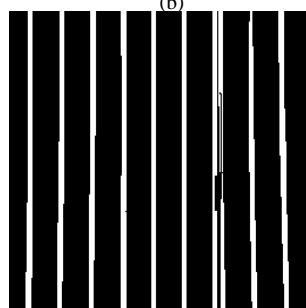
(a)



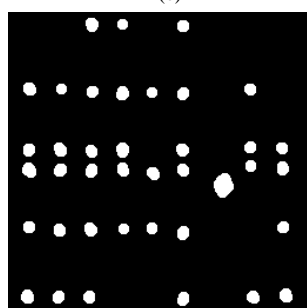
(b)



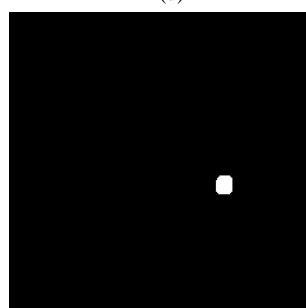
(c)



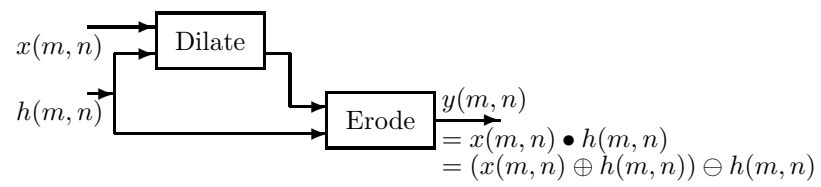
(d)

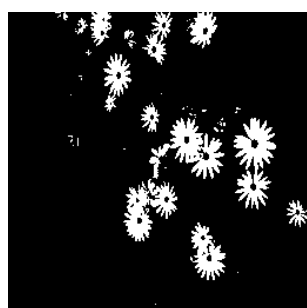


(e)



(f)

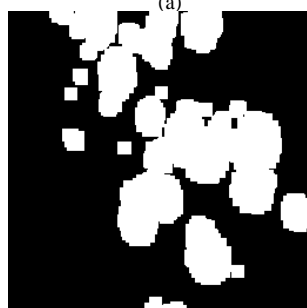




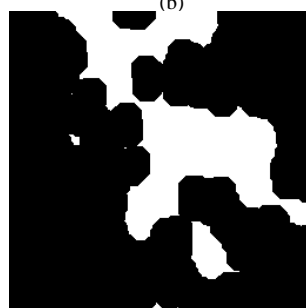
(a)



(b)



(c)



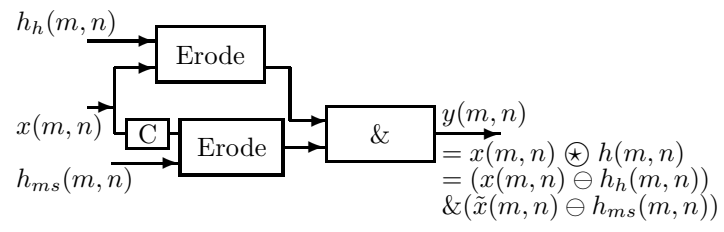
(d)

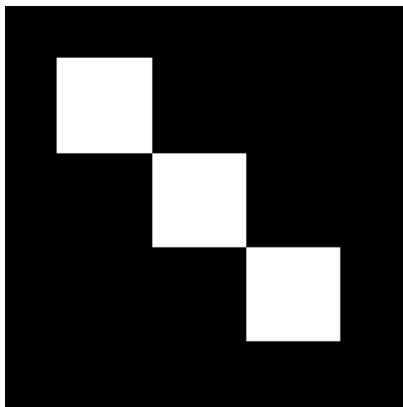


(e)

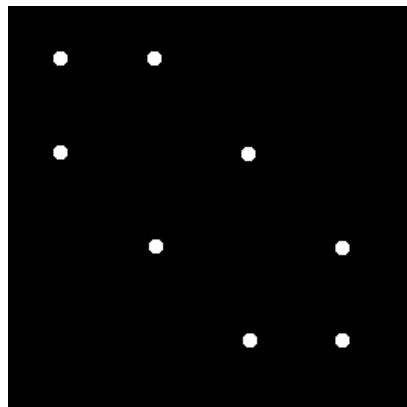


(f)

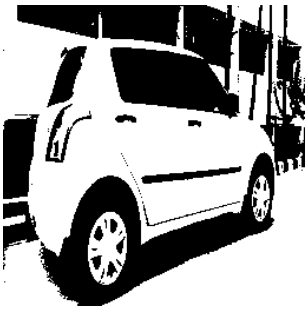




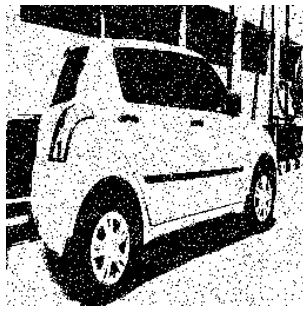
(a)



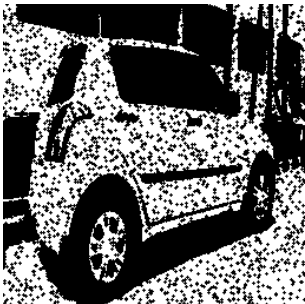
(b)



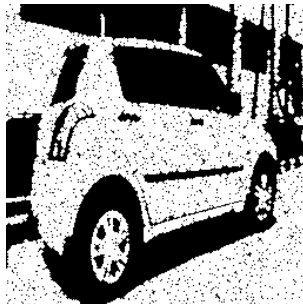
(a)



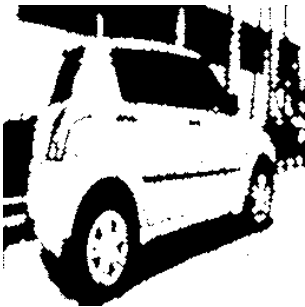
(b)



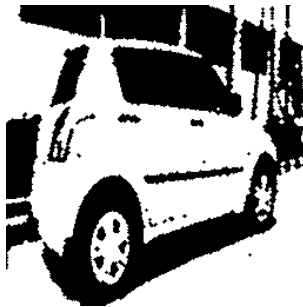
(c)



(d)



(e)



(f)



(a)



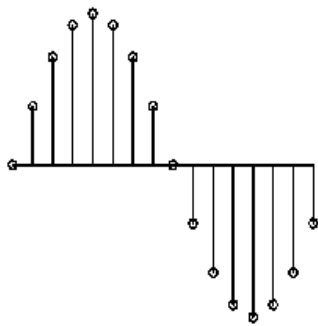
(b)



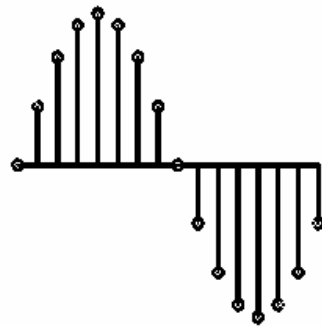
(c)



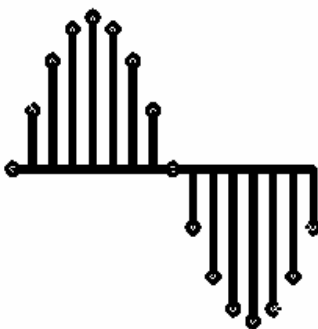
(d)



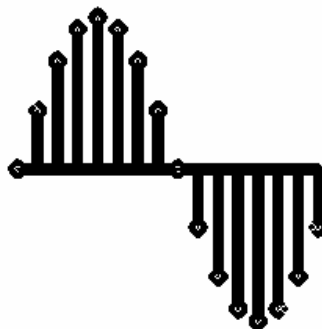
(a)



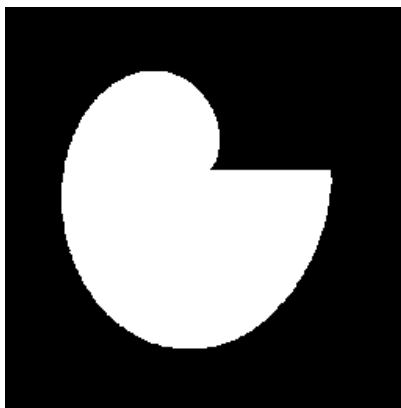
(b)



(c)



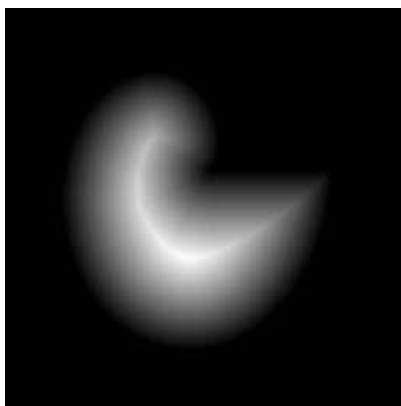
(d)



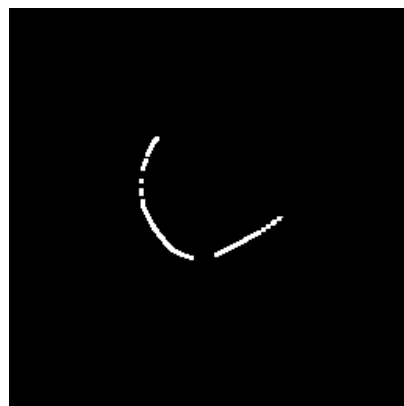
(a)



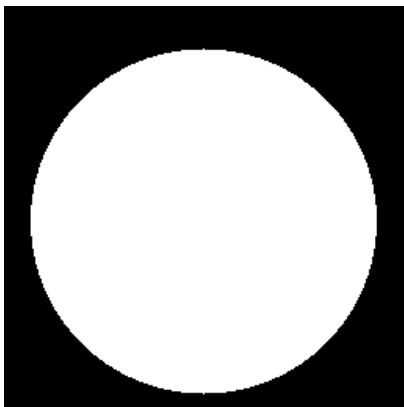
(b)



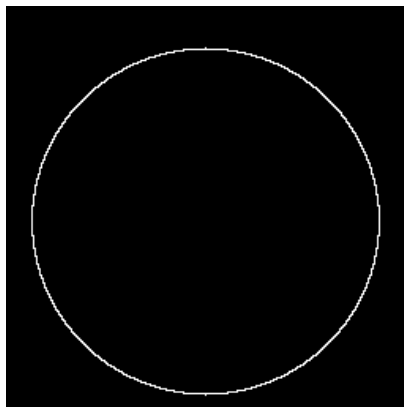
(c)



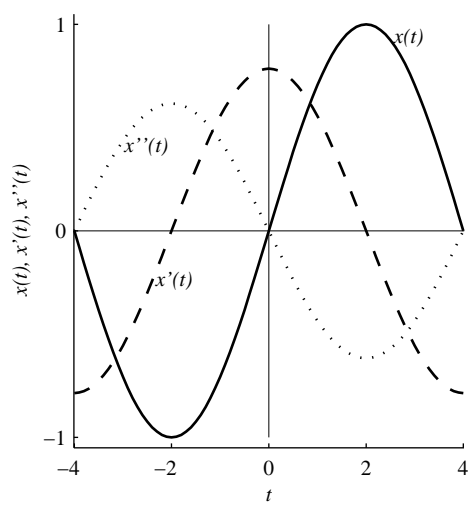
(d)

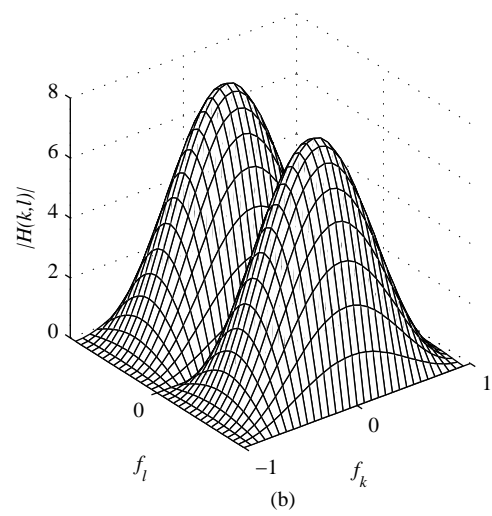
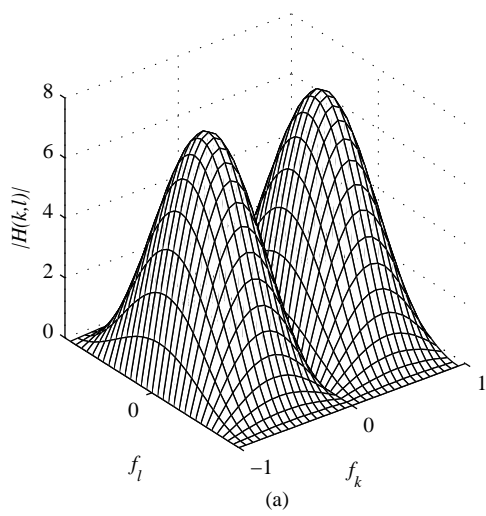


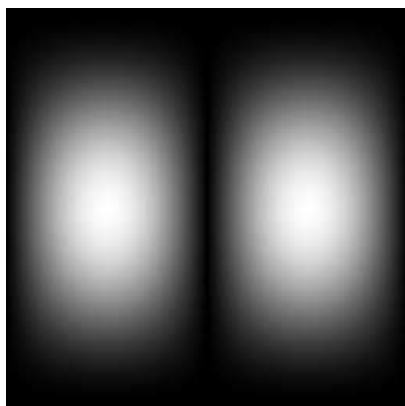
(a)

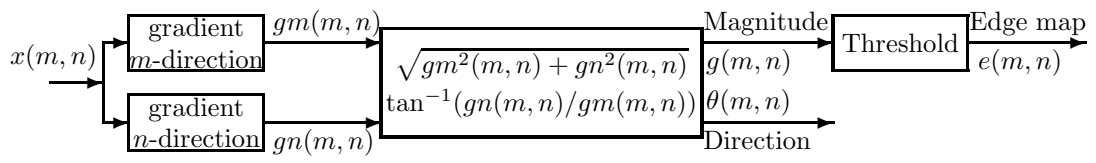


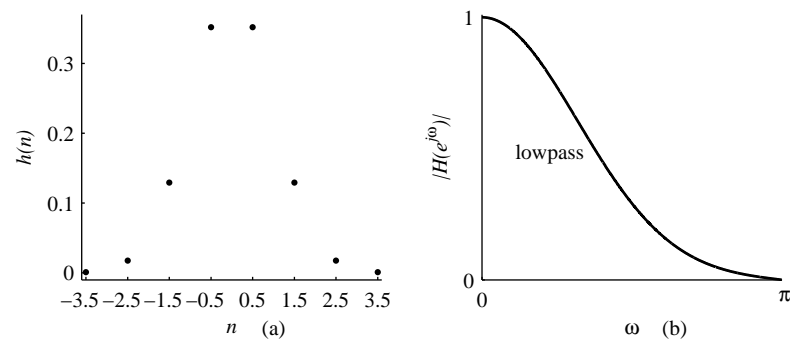
(b)

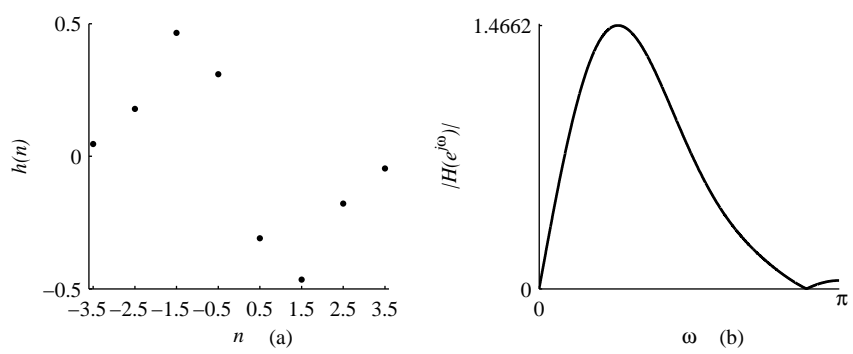


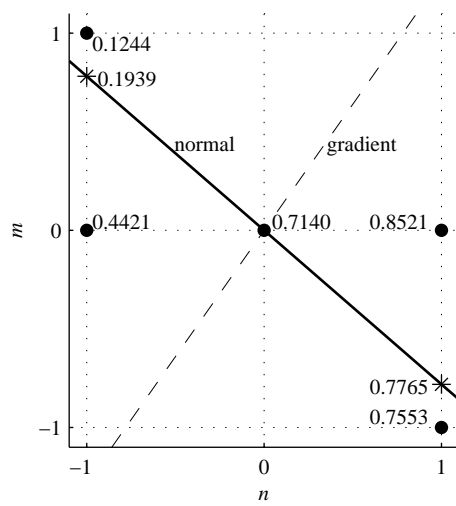


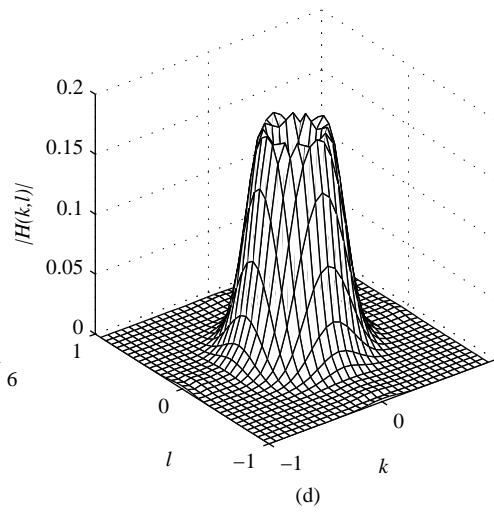
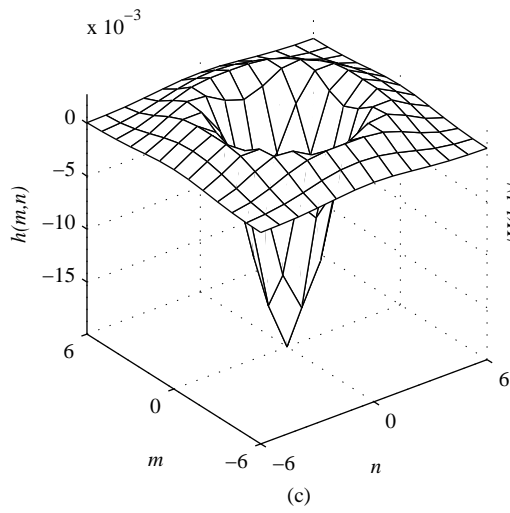
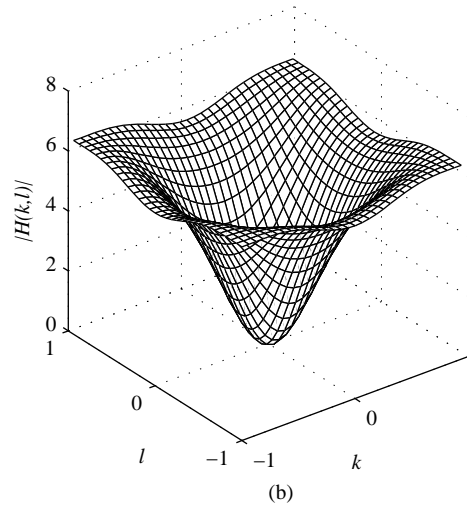
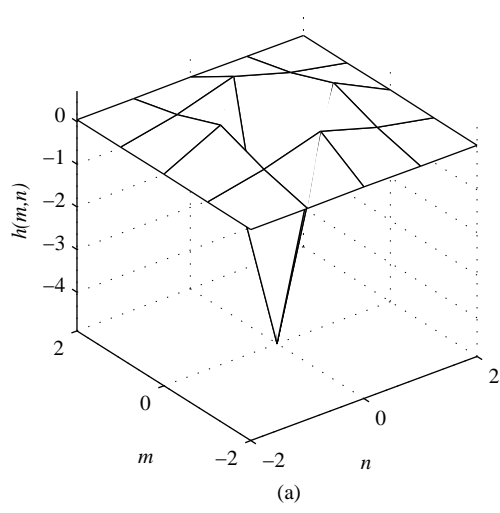


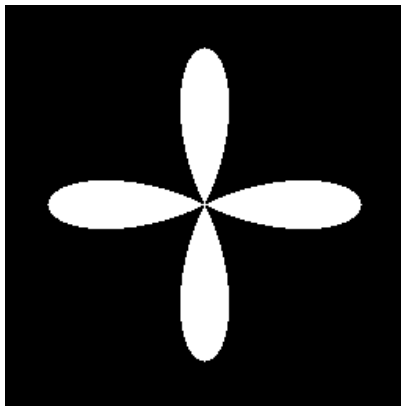




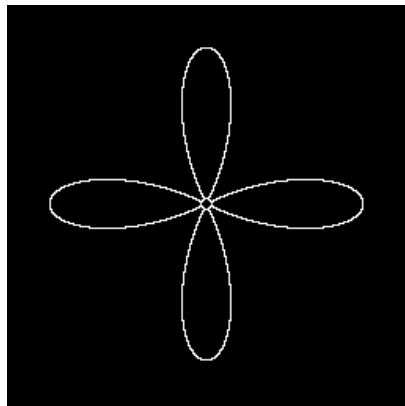




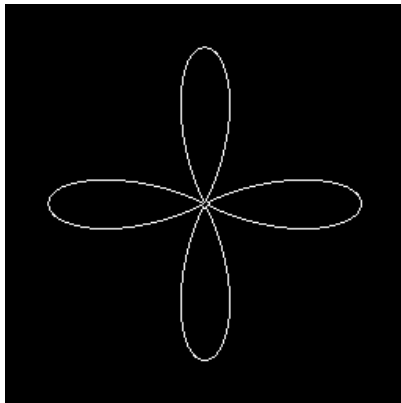




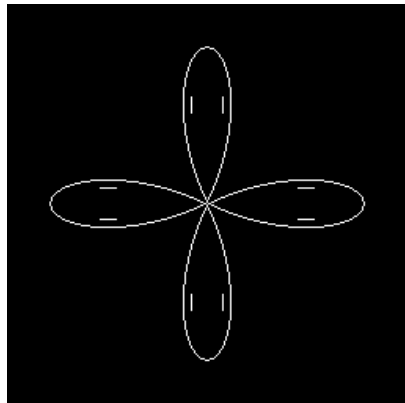
(a)



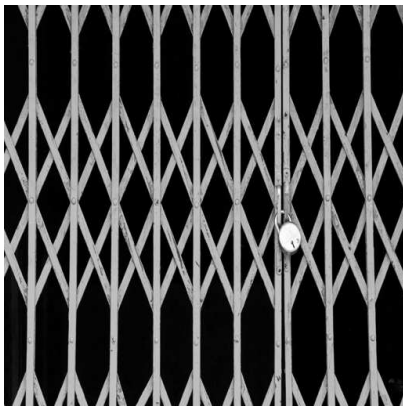
(b)



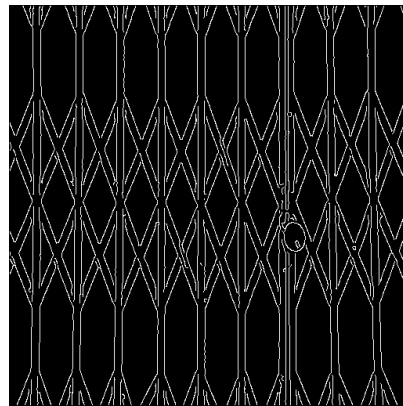
(c)



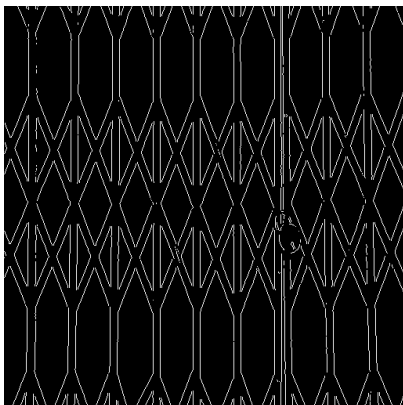
(d)



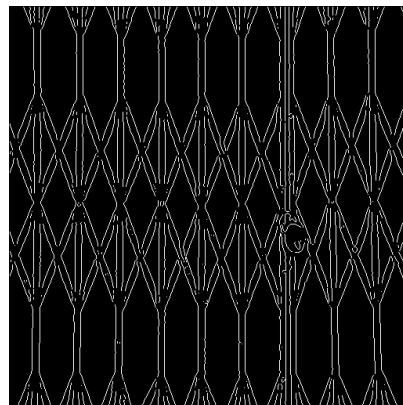
(a)



(b)



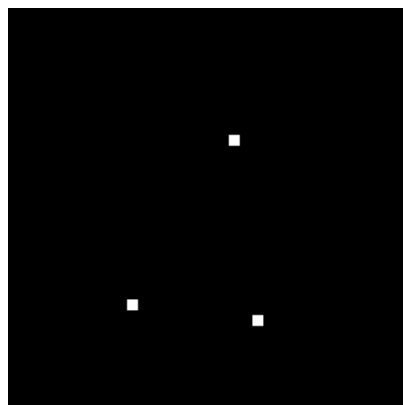
(c)



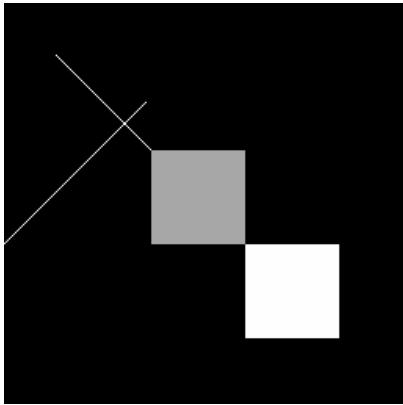
(d)



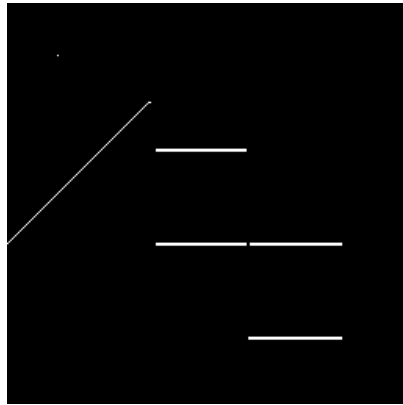
(a)



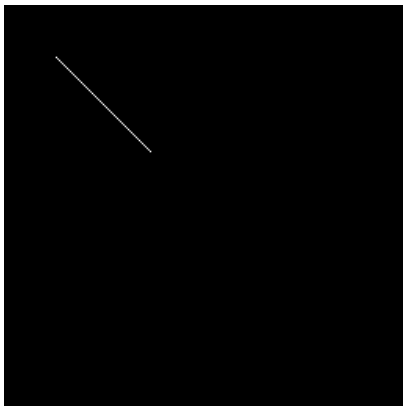
(b)



(a)



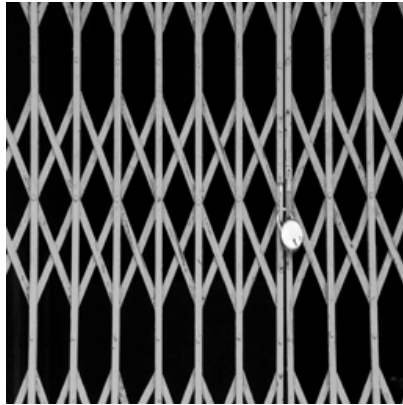
(b)



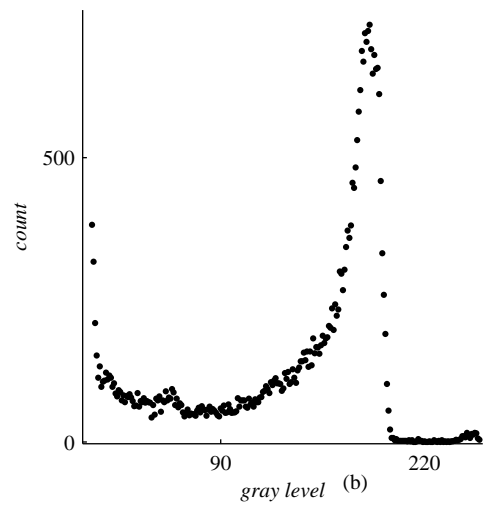
(c)



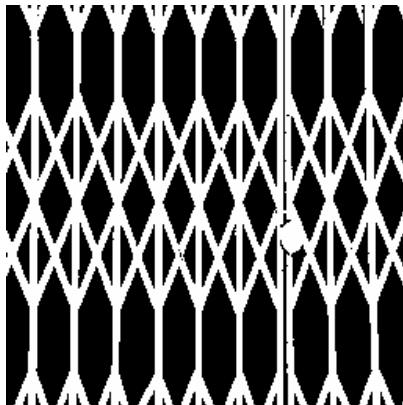
(d)



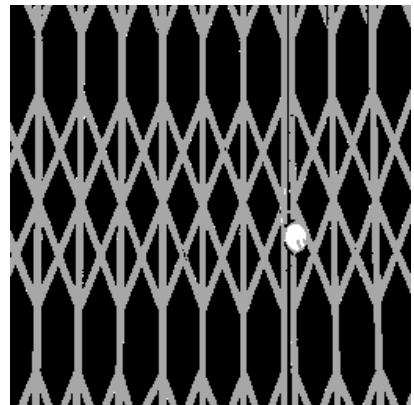
(a)



(b)



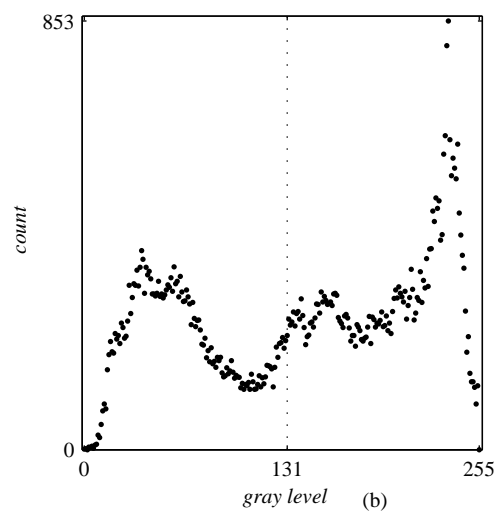
(c)



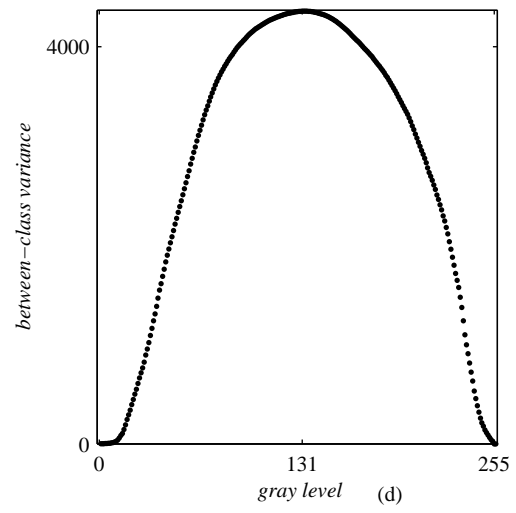
(d)

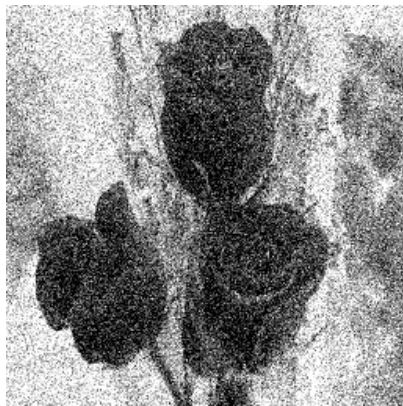


(a)

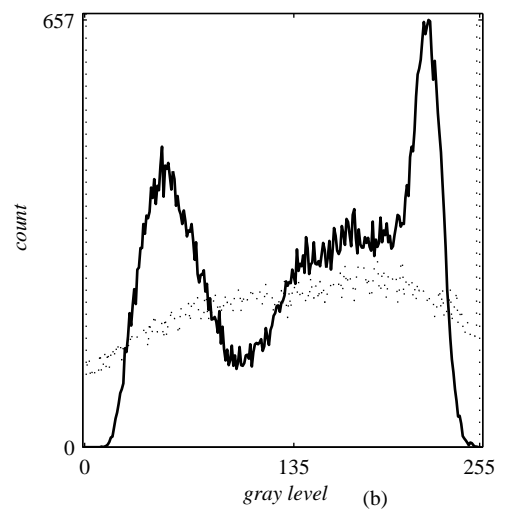


(c)





(a)



(b)



(c)



(d)



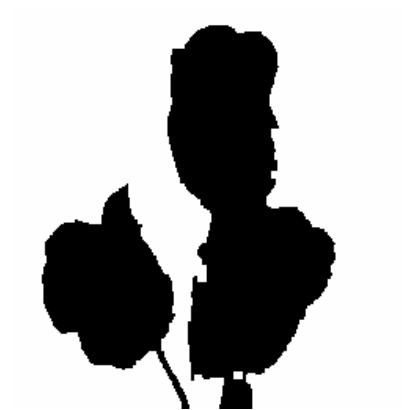
(a)



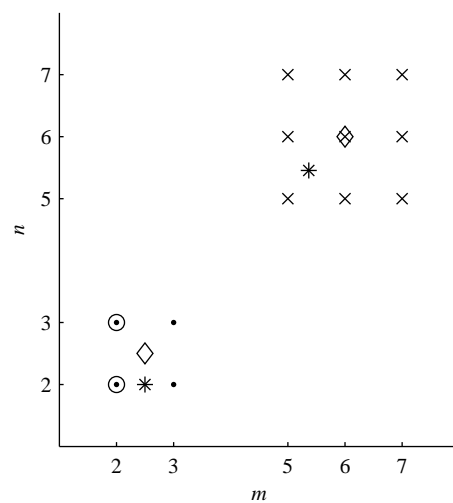
(b)



(c)

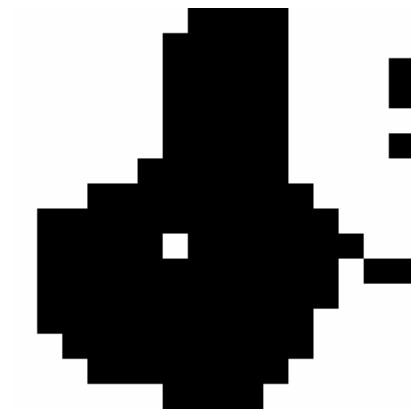


(d)





(a)



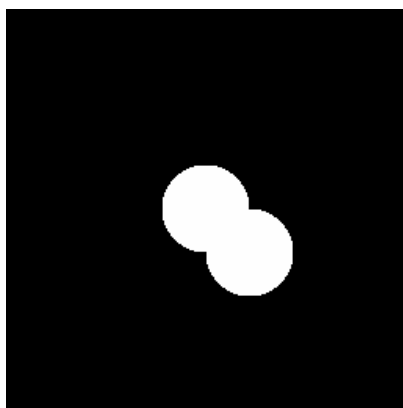
(b)



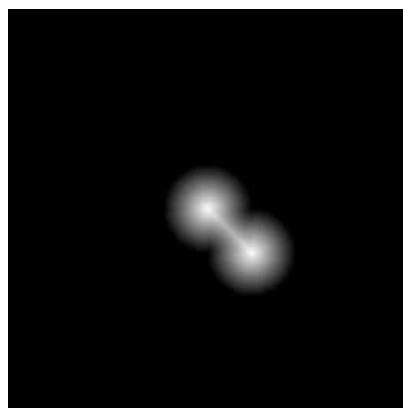
(c)



(d)



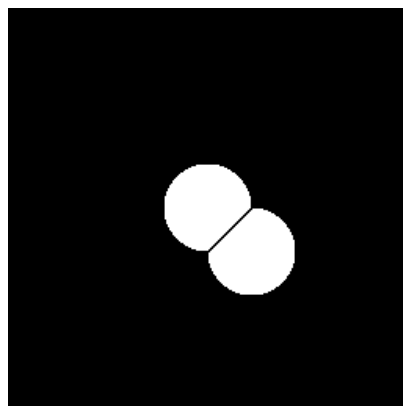
(a)



(b)



(c)



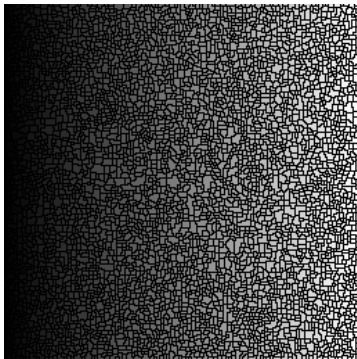
(d)



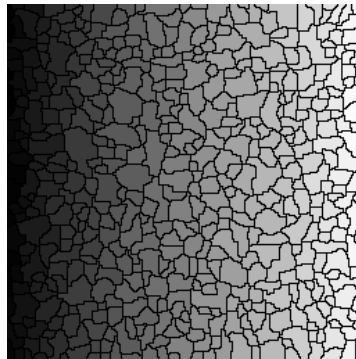
(a)



(b)



(c)



(d)



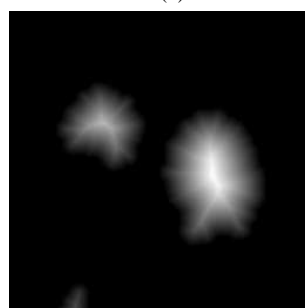
(a)



(b)



(c)



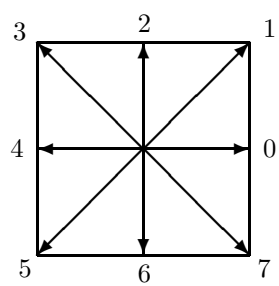
(d)

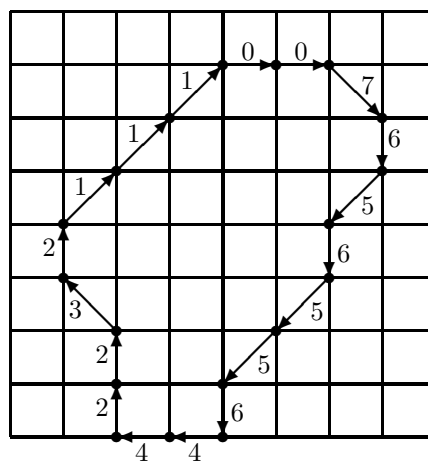


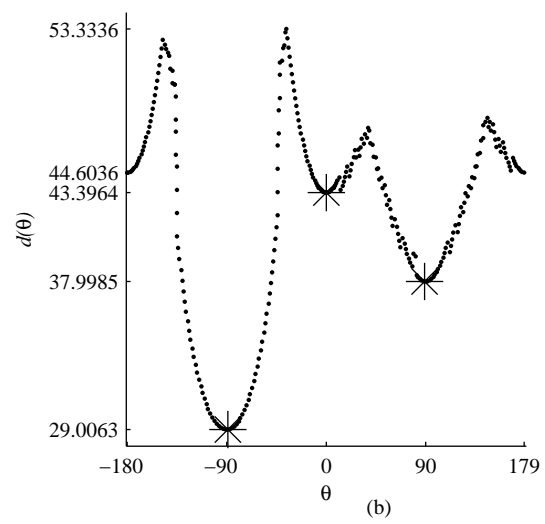
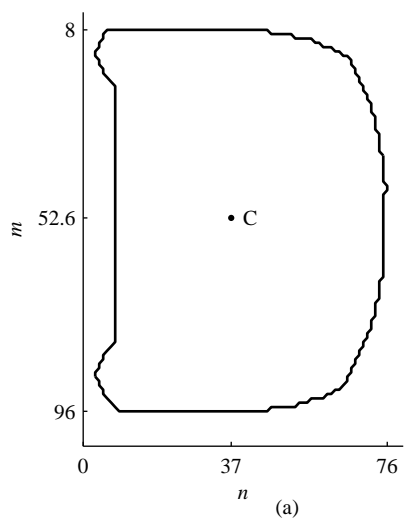
(e)

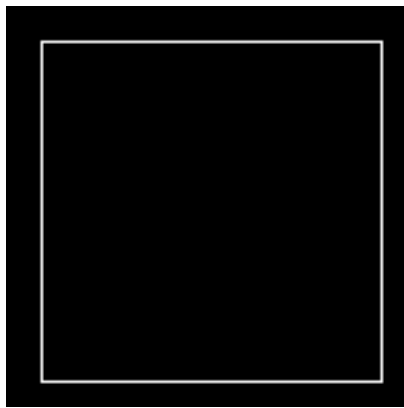


(f)

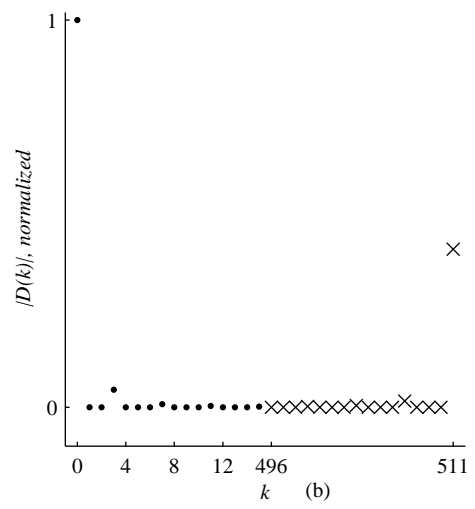




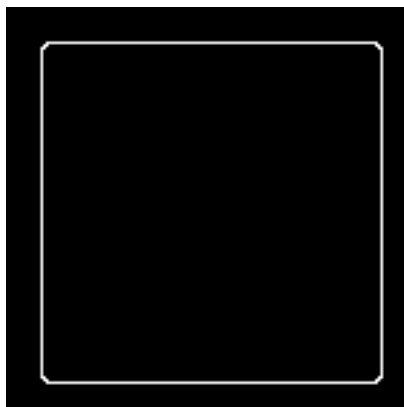




(a)



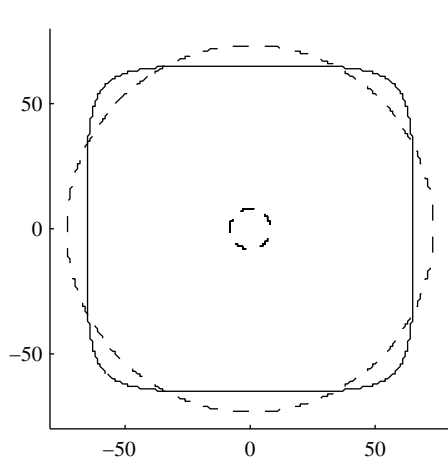
(b)



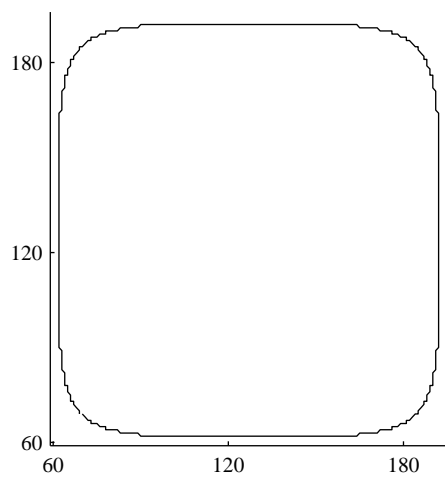
(c)



(d)



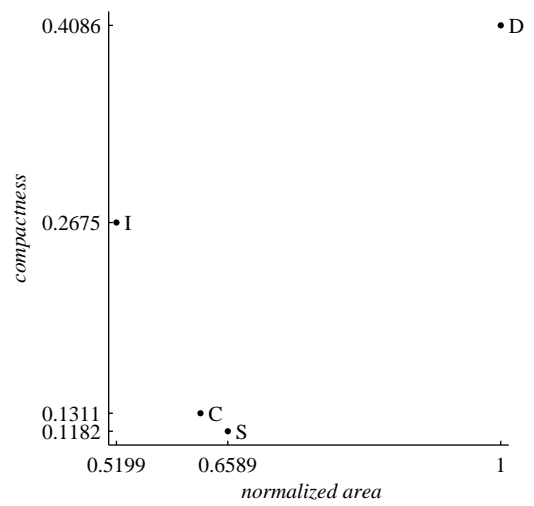
(a)



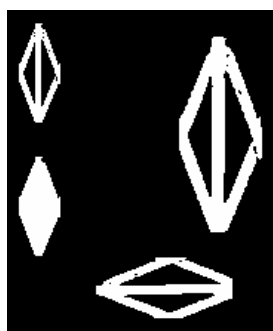
(b)



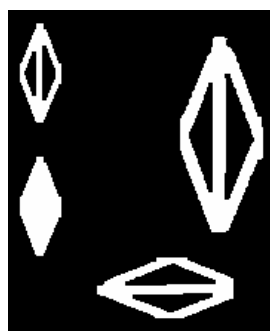
(a)



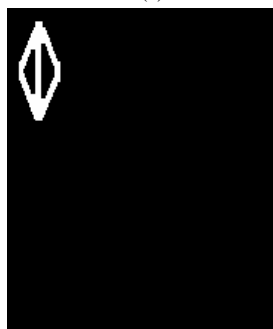
(b)



(a)



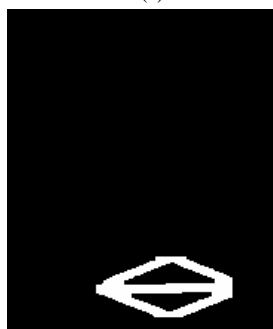
(b)



(c)



(d)



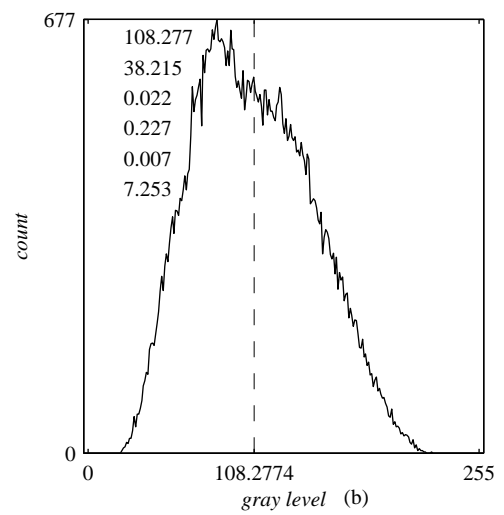
(e)



(f)

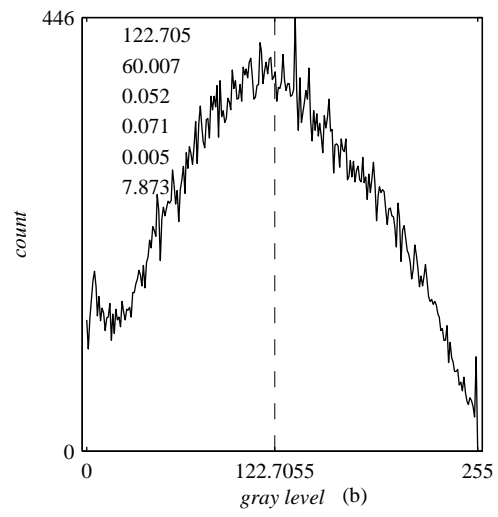


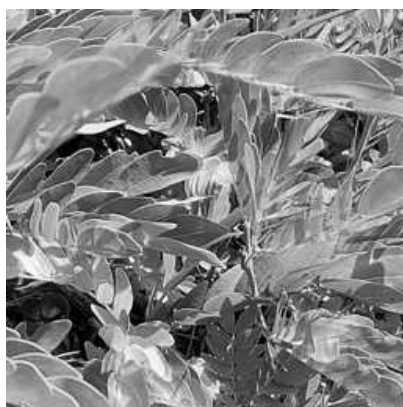
(a)



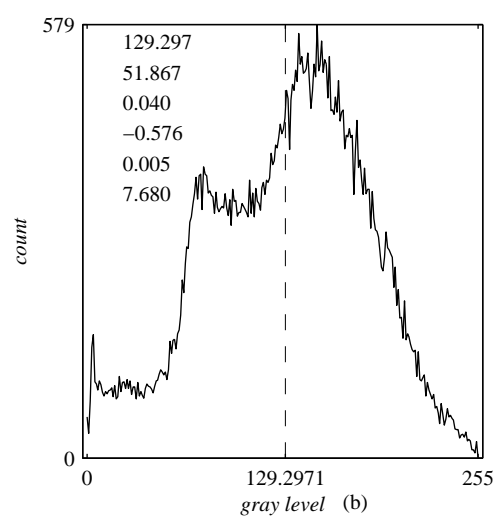


(a)



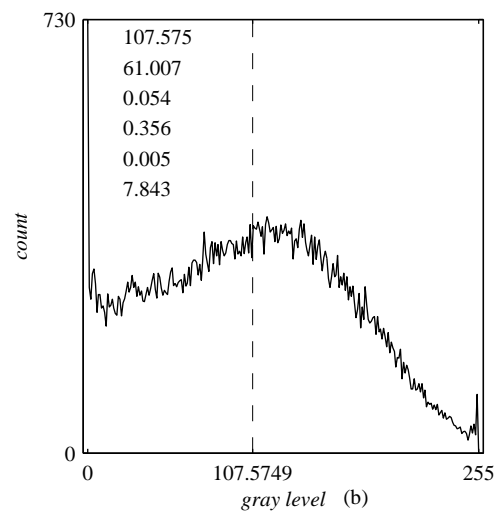


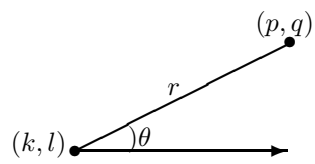
(a)

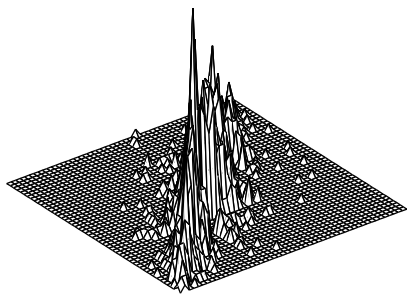




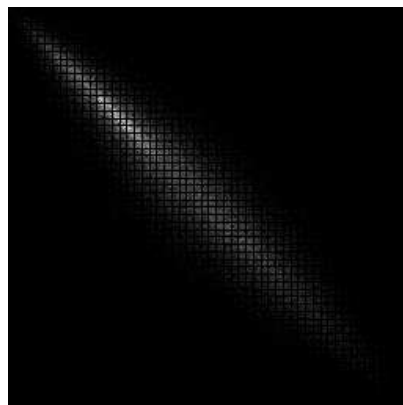
(a)



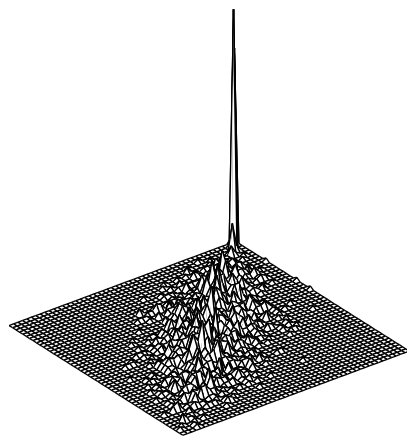




(a)



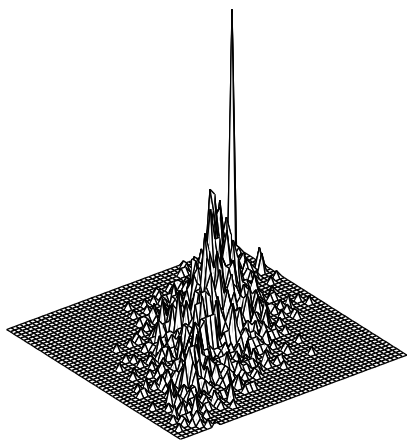
(b)



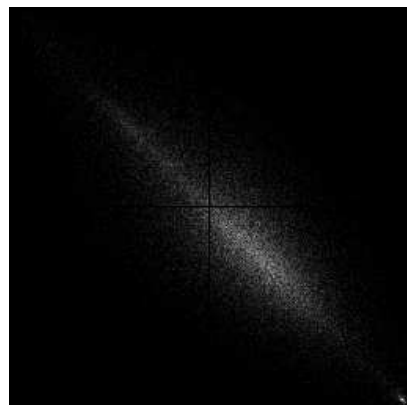
(a)



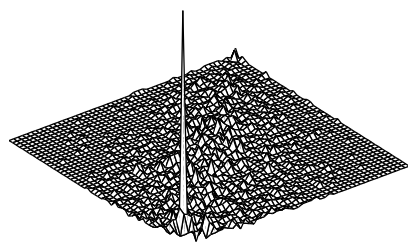
(b)



(a)



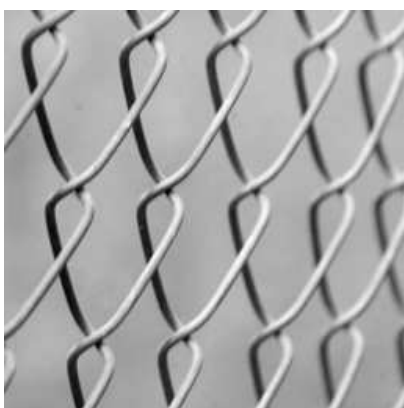
(b)



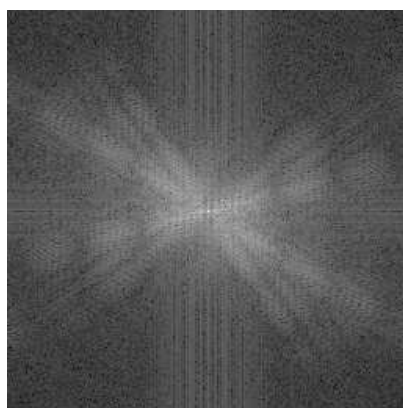
(a)



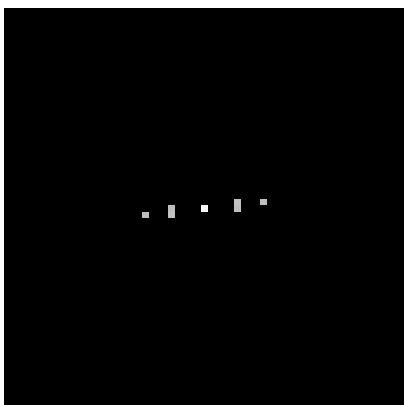
(b)



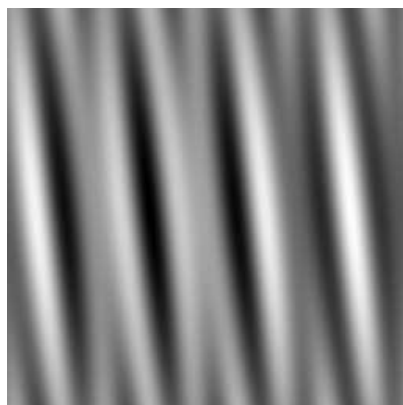
(a)



(b)



(c)



(d)





(a)



(b)



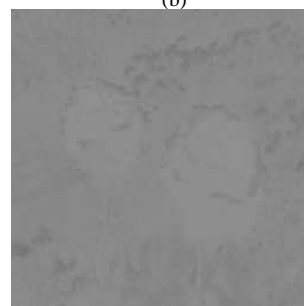
(a)



(b)



(c)



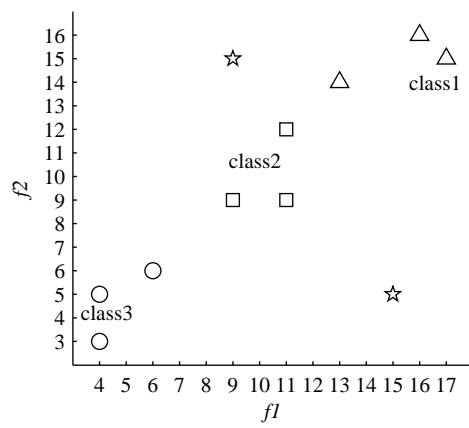
(d)

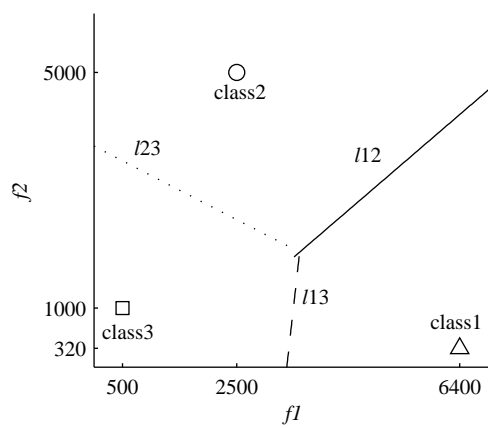


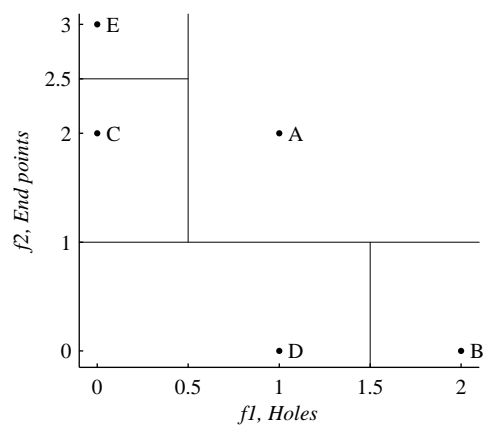
(e)

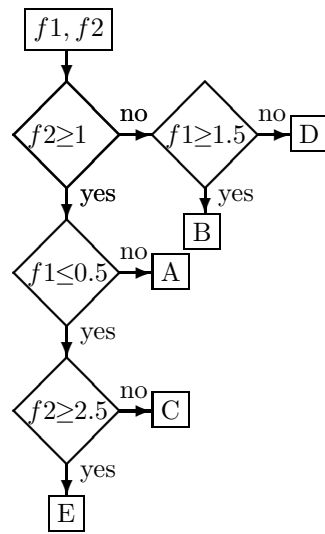


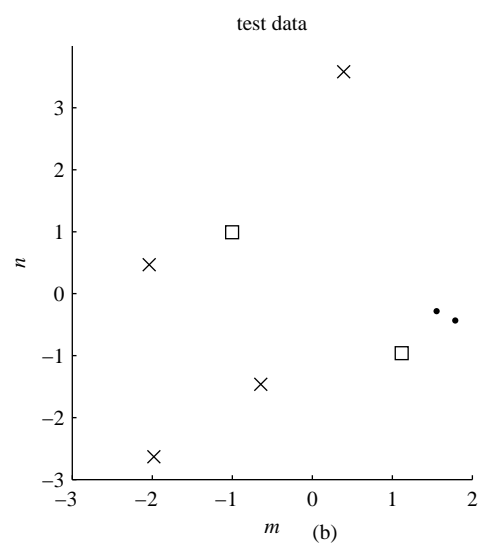
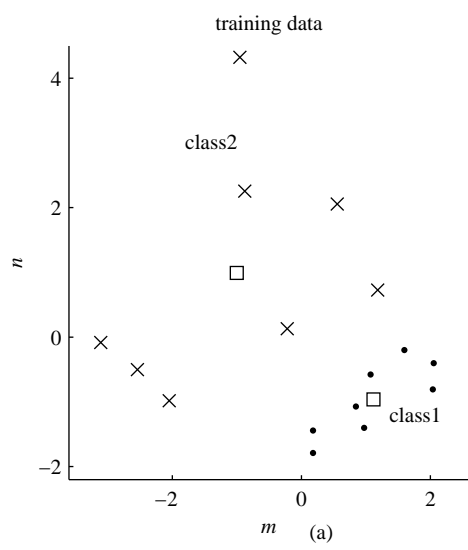
(f)

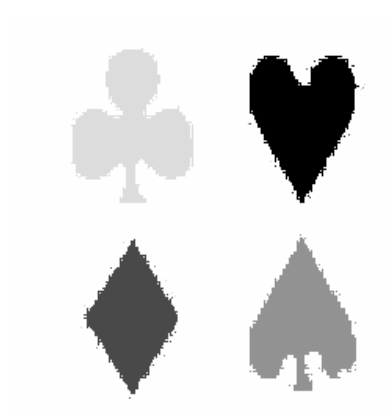




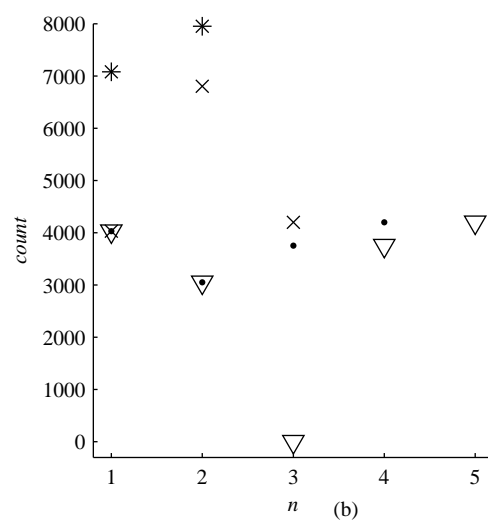




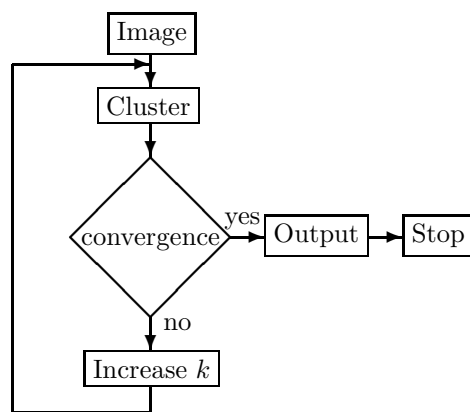


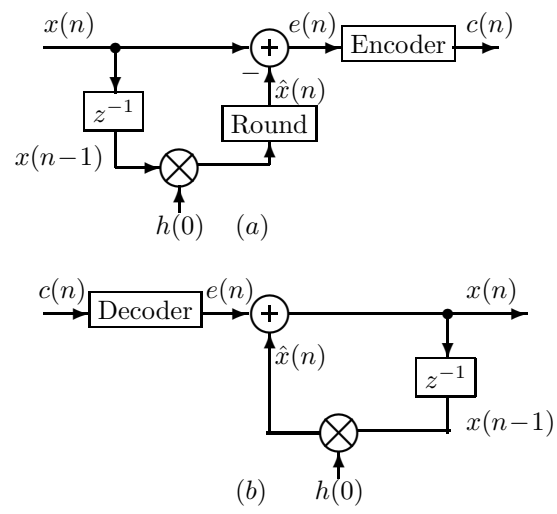


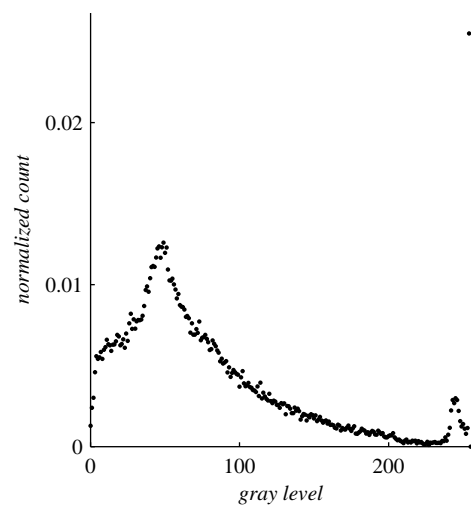
(a)



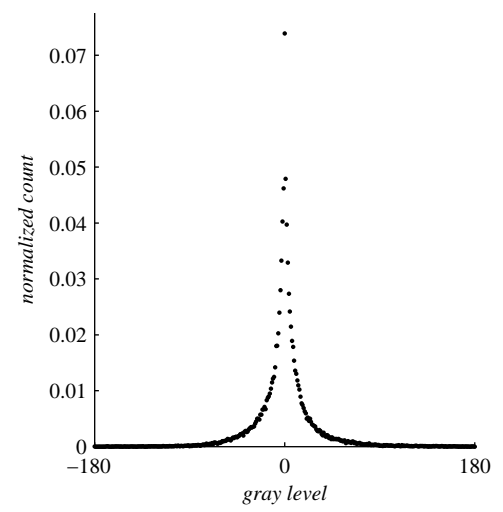
(b)



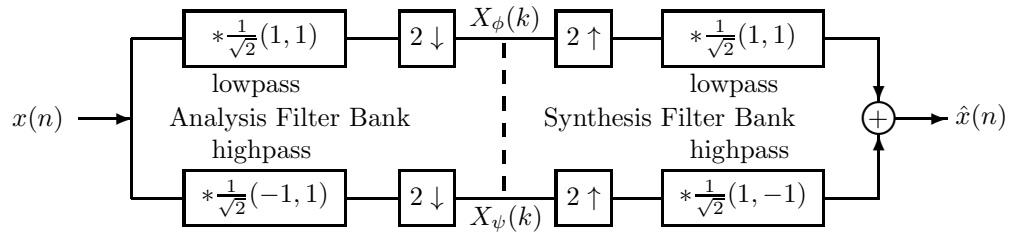


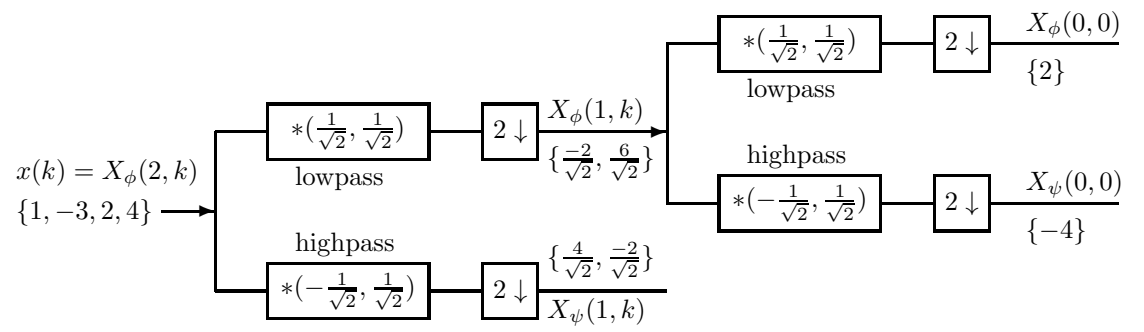


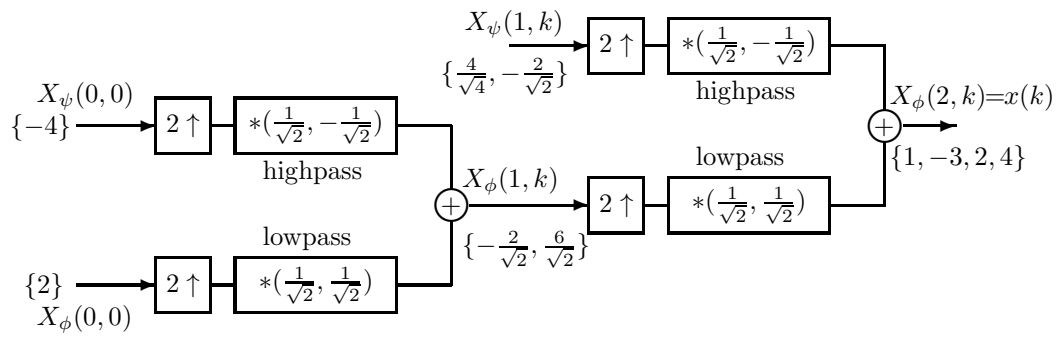
(a)

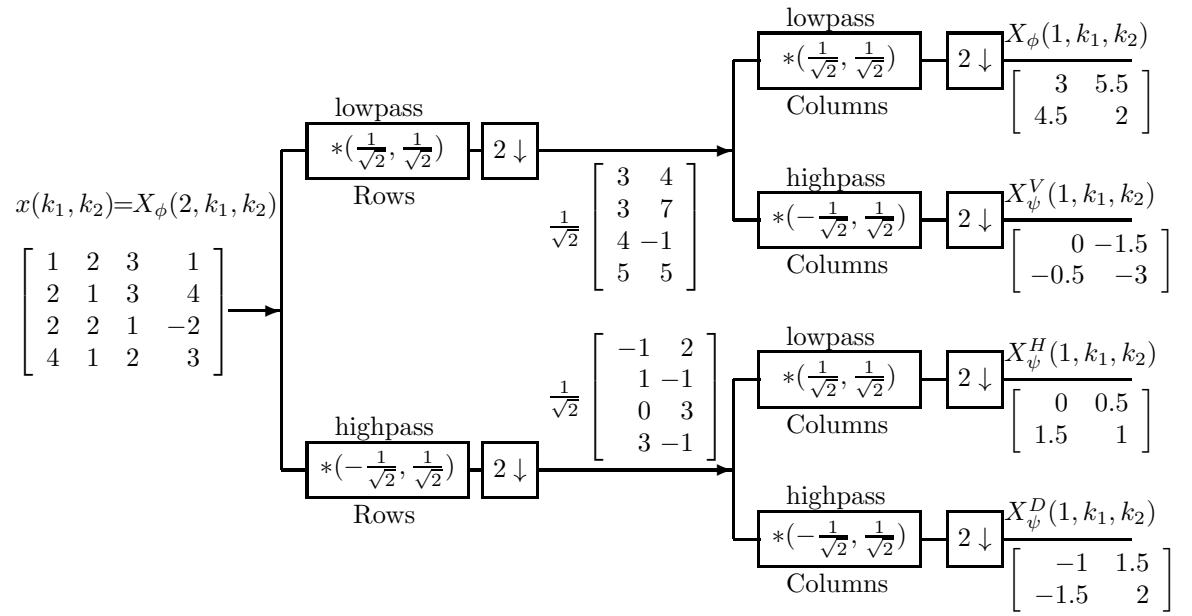


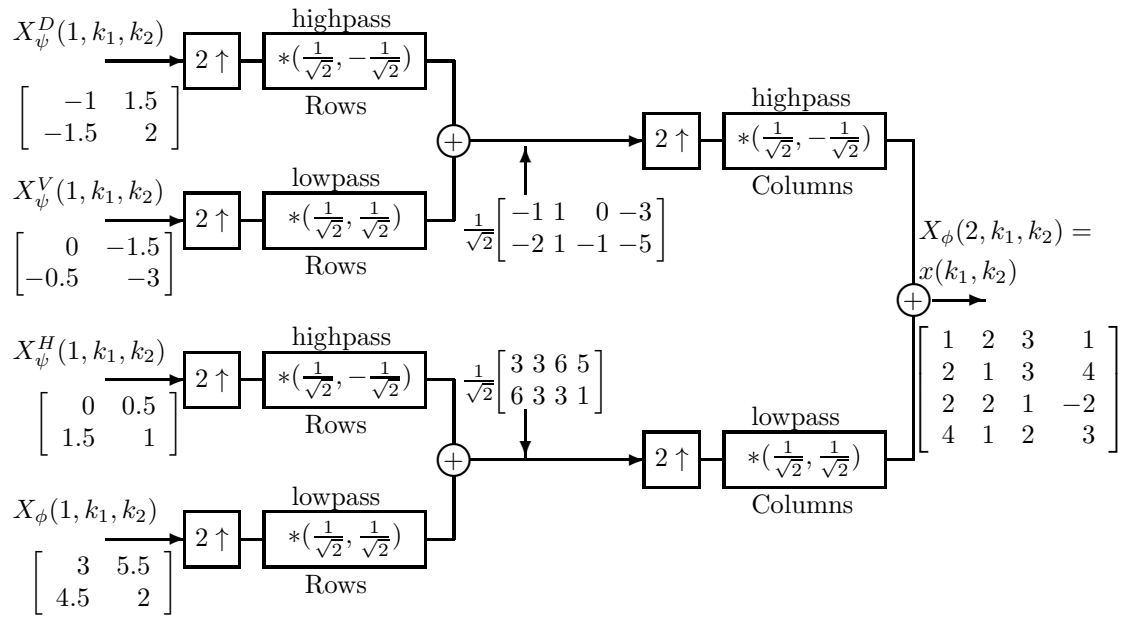
(b)

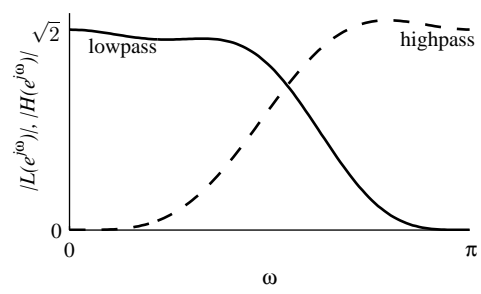














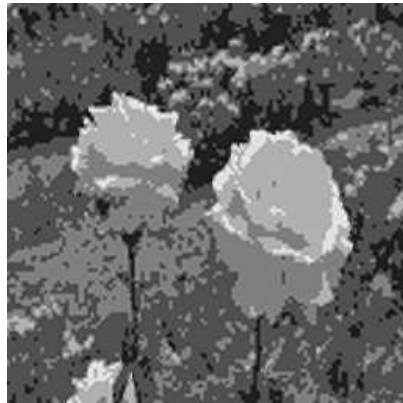
(a)



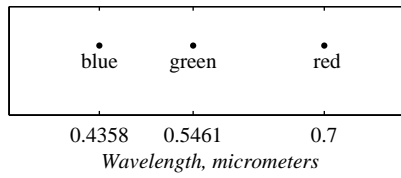
(b)

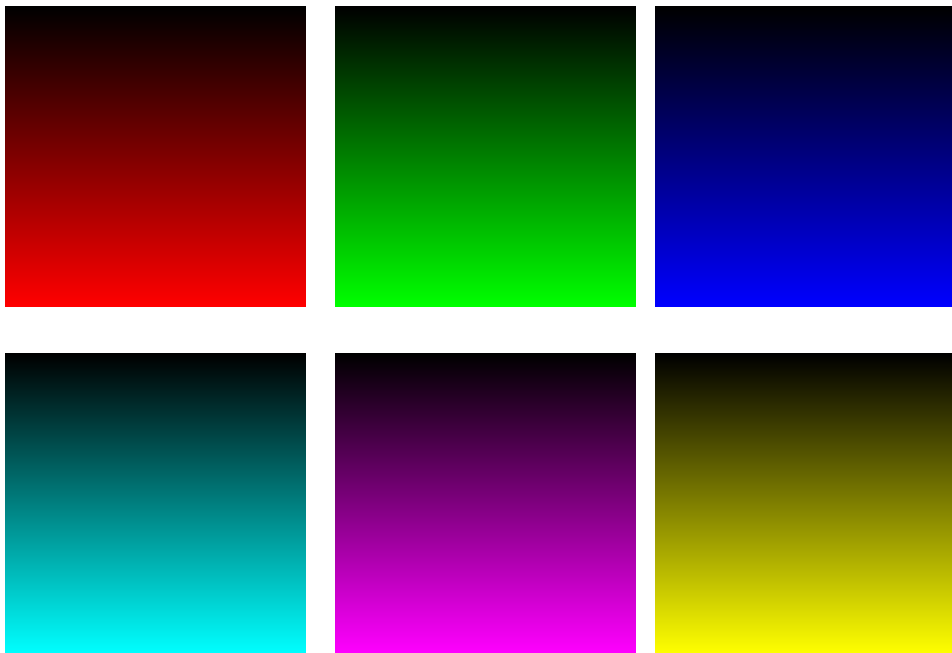


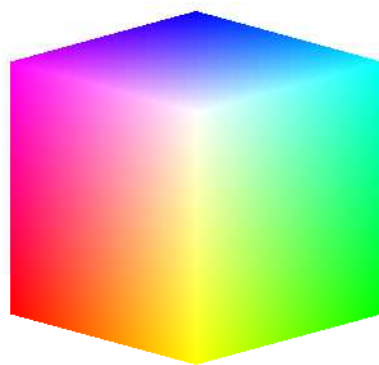
(c)

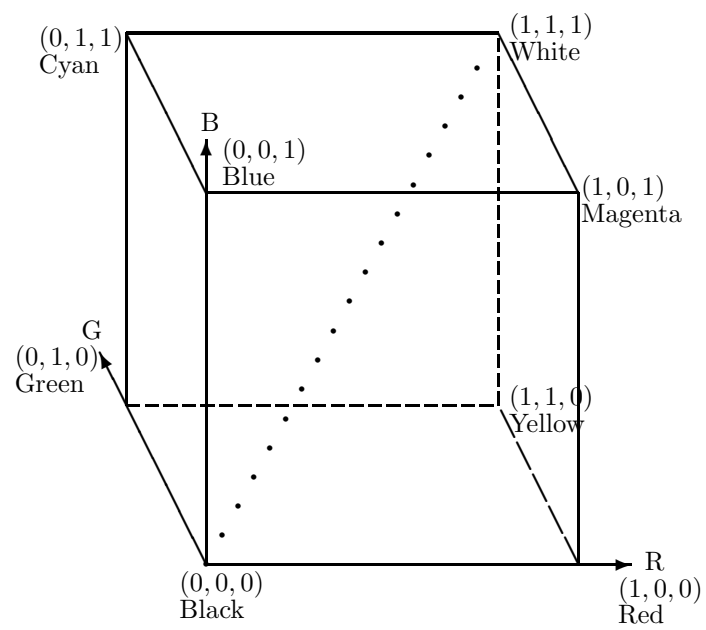


(d)











(a)



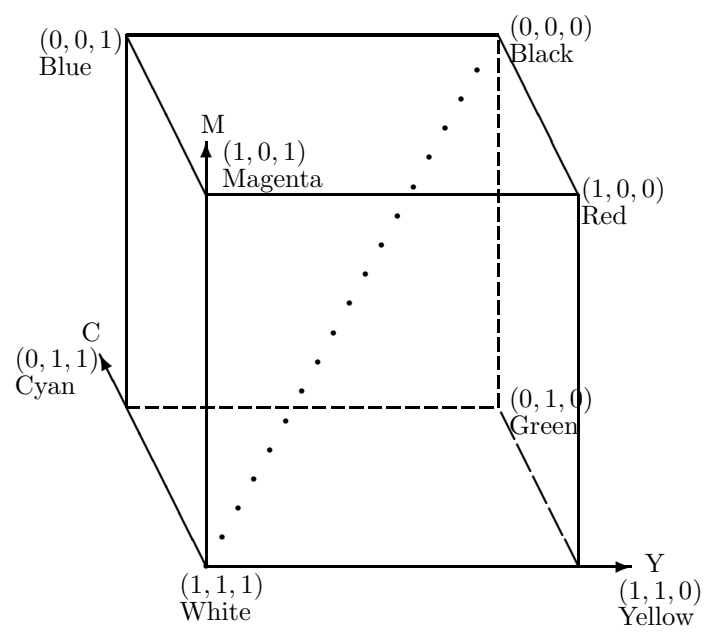
(b)



(c)

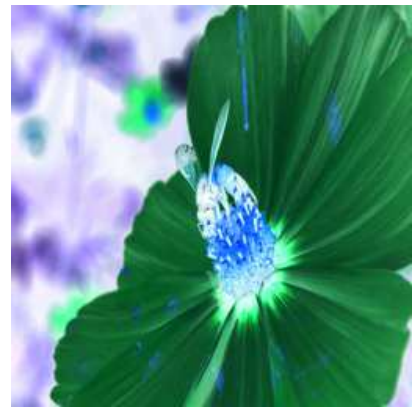


(d)

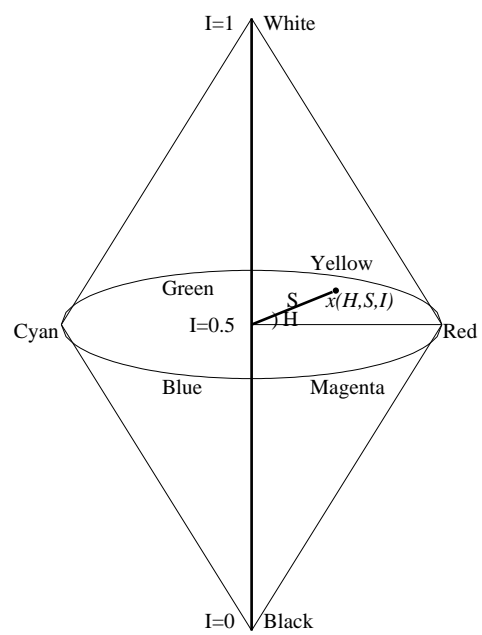




(a)

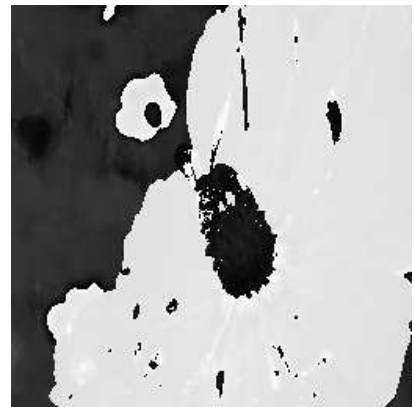


(b)





(a)



(b)



(c)



(d)



(a)



(b)



(c)



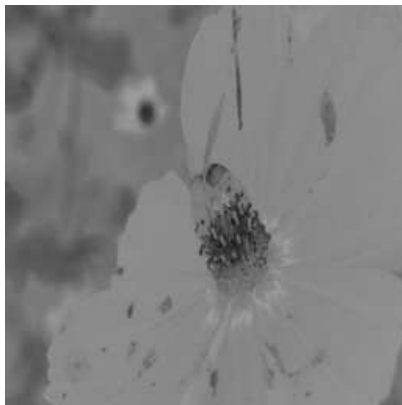
(d)



(a)



(b)



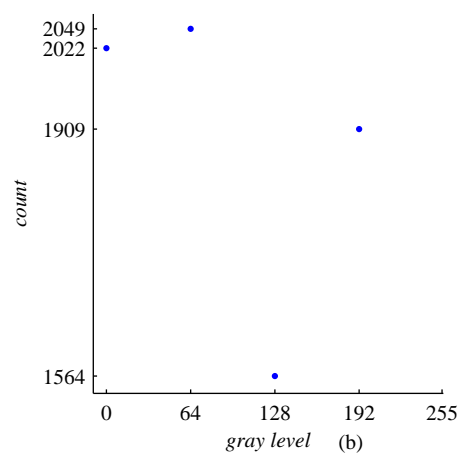
(c)



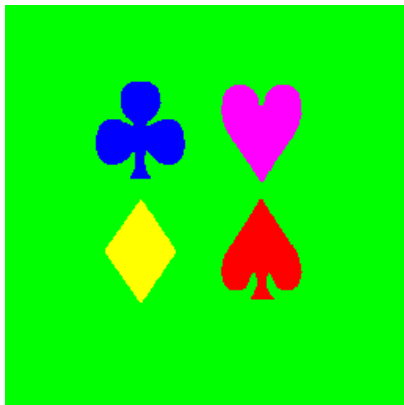
(d)



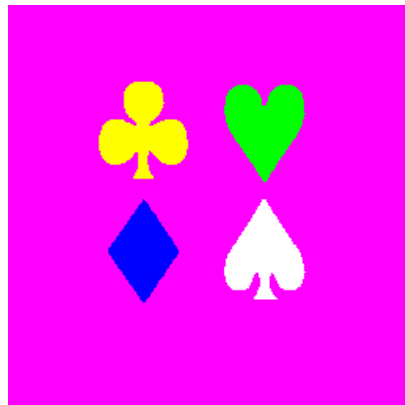
(a)



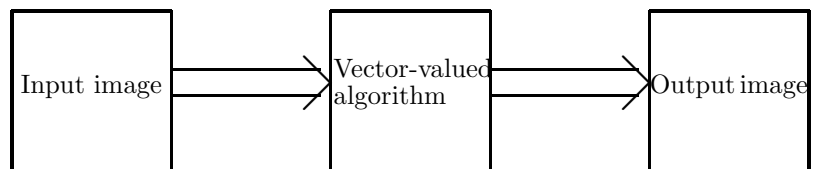
(b)



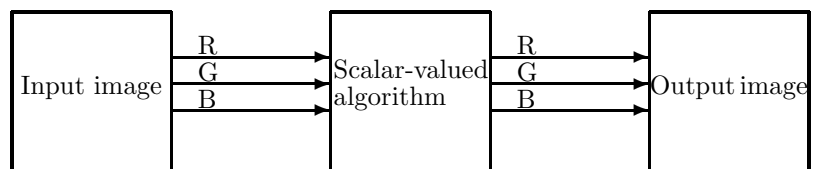
(c)



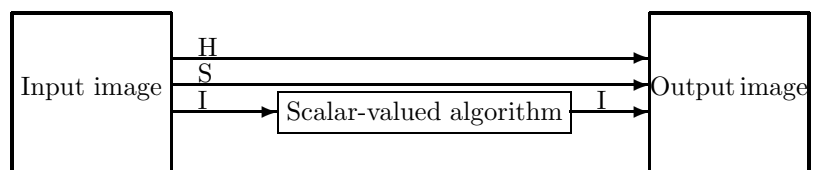
(d)



(a)



(b)



(c)



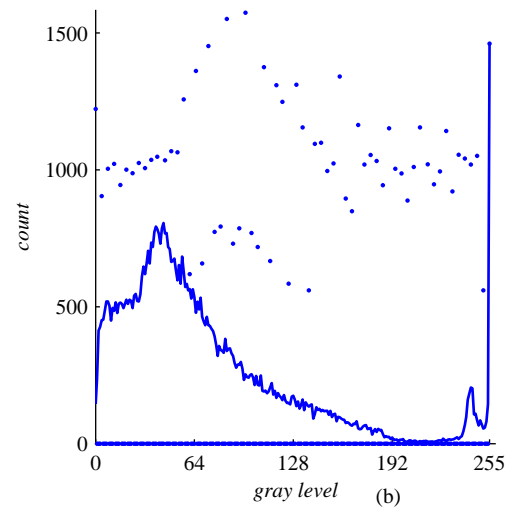
(a)



(b)



(a)



(b)



(c)



(d)



(a)



(b)



(c)



(d)



(a)



(b)



(c)



(d)



(a)



(b)



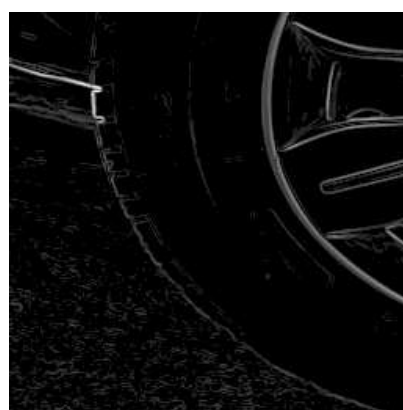
(c)



(d)



(a)



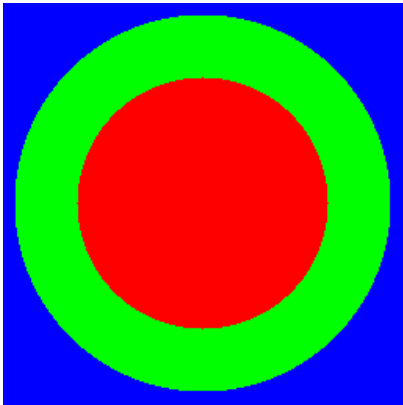
(b)



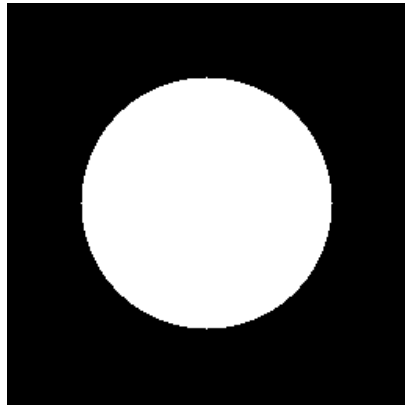
(c)



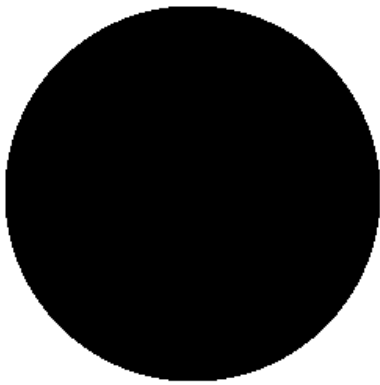
(d)



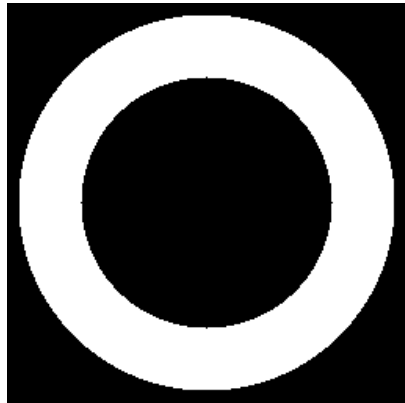
(a)



(b)



(c)



(d)



(a)



(b)



(c)



(d)