CS 4381

2) $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$, $A^{-1} = \begin{bmatrix} \frac{a_{22}}{D} & \frac{a_{12}}{D} \\ \frac{a_{21}}{D} & \frac{a_{11}}{D} \end{bmatrix}$, $D = a_{11}a_{22} - a_{12}a_{21}$

$$AA^{-1} = \begin{bmatrix} \frac{a_{11}a_{22} - a_{12}a_{21}}{D}, & \frac{-a_{11}a_{12} + a_{12}a_{11}}{D} \\ \frac{a_{21}a_{22} - a_{22}a_{21}}{D}, & \frac{-a_{21}a_{12} + a_{22}a_{11}}{D} \end{bmatrix} = \begin{bmatrix} D/D & 0 \\ 0 & D/D \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$A^{-1}A = \begin{bmatrix} \frac{a_{22}a_{11} - a_{12}a_{21}}{D} & \frac{a_{22}a_{12} - a_{12}a_{22}}{D} \\ \frac{-a_{21}a_{11} + a_{11}a_{21}}{D} & \frac{-a_{21}a_{12} + a_{11}a_{22}}{D} \end{bmatrix} = \begin{bmatrix} D/D & 0 \\ 0 & D/D \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Since both AA^{-1} and $A^{-1}A$ = Identity matrix we show that A^{-1} is inverse of A.

3)

k	p_k	x, y	$2x_{k+1}$	$2y_{k+1}$
		(0,8)		
0	$\frac{-27}{4}$	(1,8)		
1	$\frac{-15}{4}$	(2,8)		
2	$\frac{5}{4}$	(3,7)		
3	$-\frac{23}{4}$	(4,7)		
4	$\frac{13}{4}$	(5,6)		
5	$\frac{9}{4}$	(6,5)		
6				

$p_1 = -\frac{27}{4} + 2(1) + 1$

$p_2 = \frac{-15}{4} + 2(2) + 1$

$p_3 = \frac{5}{4} + 6 + 1 - 2(7)$

$p_4 = \frac{-23}{4} + 2(4) + 1$

$p_5 = \frac{13}{4} + 2(5) + 1 - 2(6)$

	1,8	2,8	3,7	4,7	5,6	6,5
y,x	8,1	8,2	7,3	7,4	6,5	5,6
y,-x	8,-1	8,-2	7,-3	7,-4	6,-5	5,-6
x,-y	1,-8	2,-8	3,-7	4,-7	5,-6	6,-5
-x,-y	-1,-8	-2,-8	-3,-7	-4,-7	-5,-6	-6,-5
-y,-x	-8,-1	-8,-2	-7,-3	-7,-4	-6,-5	-5,-6
-y,x	-8,1	-8,2	-7,3	-7,4	-6,5	-5,6
-x,y	-1,8	-2,8	-3,7	-4,7	-5,6	-6,5