

Nov 01

a) $|R| = -0.28^2 - 0.96^2 = -1$

b) $R_{11} = -0.28 \quad R_{21} = -0.96$
 $R_{12} = -0.96 \quad R_{22} = 0.28$

$$R^{-1} = \frac{1}{-1} \cdot \begin{pmatrix} -0.28 & -0.96 \\ -0.96 & 0.28 \end{pmatrix} = \begin{pmatrix} 0.28 & 0.96 \\ 0.96 & -0.28 \end{pmatrix} = R \quad \checkmark$$

Tambien: $R \cdot R = \begin{pmatrix} 0.28 & 0.96 \\ 0.96 & -0.28 \end{pmatrix} \cdot \begin{pmatrix} 0.28 & 0.96 \\ 0.96 & -0.28 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad \checkmark$

Nov 01

a) $A = \begin{pmatrix} 2 & -1 \\ 5 & 3 \end{pmatrix}$

$$|A| = \begin{vmatrix} 2 & -1 \\ 5 & 3 \end{vmatrix} = 6 + 5 = 11$$

$A_{11} = 3 \quad A_{21} = -(-1) = 1$
 $A_{12} = -5 \quad A_{22} = 2$

$$A^{-1} = \frac{1}{11} \begin{pmatrix} 3 & 1 \\ -5 & 2 \end{pmatrix}$$

b) $\begin{pmatrix} 2 & -1 \\ 5 & 3 \end{pmatrix} \cdot X = \begin{pmatrix} 4 & -4 \\ -1 & 12 \end{pmatrix}$

$$X = \begin{pmatrix} 2 & -1 \\ 5 & 3 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 4 & -4 \\ -1 & 12 \end{pmatrix} = \frac{1}{11} \begin{pmatrix} 3 & 1 \\ -5 & 2 \end{pmatrix} \begin{pmatrix} 4 & -4 \\ -1 & 12 \end{pmatrix} =$$

$$= \frac{1}{11} \begin{pmatrix} 11 & 0 \\ -22 & 44 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ -2 & 4 \end{pmatrix}$$

May 03

$$AX + X = \begin{pmatrix} 3 & 1 \\ -5 & 6 \end{pmatrix} \cdot \begin{pmatrix} a & b \\ c & d \end{pmatrix} + \begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 3a+c & 3b+d \\ -5a+6c & -5b+6d \end{pmatrix} + \begin{pmatrix} a & b \\ c & d \end{pmatrix} =$$

$$= \begin{pmatrix} 4a+c & 4b+d \\ -5a+7c & -5b+7d \end{pmatrix}$$

$$AX + X = B \Rightarrow \begin{cases} 4a+c = 4 \\ 4b+d = 8 \\ -5a+7c = 0 \\ -5b+7d = -3 \end{cases}$$

$$4a+c=4 \quad \begin{cases} 4 & 1 \\ 0 & 7 \end{cases} \Rightarrow a = \frac{\begin{vmatrix} 4 & 1 \\ 0 & 7 \end{vmatrix}}{\begin{vmatrix} 4 & 1 \\ -5 & 7 \end{vmatrix}} = \frac{28}{33}$$

$$c = \frac{\begin{vmatrix} 4 & 4 \\ -5 & 0 \end{vmatrix}}{33} = \frac{20}{33}$$

$$4b+d=8 \quad \begin{cases} 4 & 1 \\ -3 & 7 \end{cases} \Rightarrow b = \frac{\begin{vmatrix} 8 & 1 \\ -3 & 7 \end{vmatrix}}{\begin{vmatrix} 4 & 1 \\ -5 & 7 \end{vmatrix}} = \frac{59}{33}$$

$$d = \frac{\begin{vmatrix} 4 & 8 \\ -5 & -3 \end{vmatrix}}{33} = \frac{28}{33}$$

May 05

a) $3Q = 2C + D \Rightarrow Q = \frac{1}{3}(2C + D) = \frac{1}{3} \left[\begin{pmatrix} -4 & 8 \\ 2 & 14 \end{pmatrix} + \begin{pmatrix} 5 & 2 \\ -1 & 2 \end{pmatrix} \right] =$
 $= \frac{1}{3} \begin{pmatrix} 1 & 10 \\ 1 & 14+a \end{pmatrix} = \begin{pmatrix} 1/3 & 10/3 \\ 1/3 & 14+a/3 \end{pmatrix}$

b) $CD = \begin{pmatrix} -2 & 4 \\ 1 & 7 \end{pmatrix} \cdot \begin{pmatrix} 5 & 2 \\ -1 & a \end{pmatrix} = \begin{pmatrix} -14 & 4a-4 \\ -2 & 2+7a \end{pmatrix}$

c) $|D| = 5a+2$
 $D_{11} = a \quad D_{21} = -2$
 $D_{12} = 1 \quad D_{22} = 5$
 $D^{-1} = \begin{pmatrix} \frac{a}{5a+2} & \frac{-2}{5a+2} \\ \frac{1}{5a+2} & \frac{5}{5a+2} \end{pmatrix}$

Nov 05

$$a) \quad |A| = \begin{vmatrix} 5 & 1 \\ 7 & 2 \end{vmatrix} = 3$$

$$\left. \begin{array}{l} A_{11} = 2 \quad A_{21} = -1 \\ A_{12} = -7 \quad A_{22} = 5 \end{array} \right\} \quad \boxed{A^{-1} = \begin{pmatrix} 2/3 & -1/3 \\ -7/3 & 5/3 \end{pmatrix}}$$

$$b) \quad AX + B = C \rightarrow AX = C - B \Rightarrow \boxed{X = A^{-1}(C - B)} \quad \boxed{D = C - B}$$

$$c) \quad X = \begin{pmatrix} 2/3 & -1/3 \\ -7/3 & 5/3 \end{pmatrix} \cdot \left[\begin{pmatrix} 9 & -7 \\ 8 & 2 \end{pmatrix} - \begin{pmatrix} 2 & 4 \\ -3 & 15 \end{pmatrix} \right] = \begin{pmatrix} 2/3 & -1/3 \\ -7/3 & 5/3 \end{pmatrix} \cdot \begin{pmatrix} 7 & -11 \\ 11 & -13 \end{pmatrix} =$$

$$= \begin{pmatrix} 3/3 & -9/3 \\ 6/3 & 12/3 \end{pmatrix} = \boxed{\begin{pmatrix} 1 & -3 \\ 2 & 4 \end{pmatrix}}$$

May 06

$$a) \quad 2 + 4 + 6 + \dots \quad a_n = a_1 + d \cdot (n-1) = 2 + 2(n-1) = 2n$$

$$S_4 = \frac{a_1 + a_4}{2} \cdot 4 = \frac{2 + 8}{2} \cdot 4 = \boxed{20}$$

$$S_{100} = \frac{a_1 + a_{100}}{2} \cdot 100 = \frac{2 + 200}{2} \cdot 100 = \boxed{10100}$$

$$b) \quad M^2 = \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 4 \\ 0 & 1 \end{pmatrix}$$

$$M^3 = \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \cdot \begin{pmatrix} 1 & 4 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 6 \\ 0 & 1 \end{pmatrix} \checkmark \quad \boxed{M^4 = \begin{pmatrix} 1 & 8 \\ 0 & 1 \end{pmatrix}}$$

$$T_n = M + M^2 + \dots + M^n = \begin{pmatrix} 1+1+\dots+1 & 2+4+\dots+2n \\ 0 & 1+1+\dots+1 \end{pmatrix} =$$

$$\boxed{T_4 = \begin{pmatrix} 4 & 20 \\ 0 & 4 \end{pmatrix}}$$

$$\boxed{T_{100} = \begin{pmatrix} 100 & 10100 \\ 0 & 100 \end{pmatrix}}$$

May 06

$$a) \quad |A| = \begin{vmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \\ 2 & 0 & 1 \end{vmatrix} = 1 + 8 - 6 - 6 = -3$$

$$A_{11} = \begin{vmatrix} 2 & 3 \\ 0 & 1 \end{vmatrix} = 2 \quad A_{21} = - \begin{vmatrix} 2 & 3 \\ 0 & 1 \end{vmatrix} = -2 \quad A_{31} = \begin{vmatrix} 2 & 3 \\ 1 & 2 \end{vmatrix} = 1$$

$$A_{12} = - \begin{vmatrix} 3 & 2 \\ 2 & 1 \end{vmatrix} = 1 \quad A_{22} = \begin{vmatrix} 3 & 2 \\ 2 & 1 \end{vmatrix} = -5 \quad A_{32} = - \begin{vmatrix} 1 & 3 \\ 3 & 2 \end{vmatrix} = 7$$

$$A_{13} = \begin{vmatrix} 3 & 1 \\ 2 & 0 \end{vmatrix} = -2 \quad A_{23} = - \begin{vmatrix} 1 & 2 \\ 2 & 0 \end{vmatrix} = 4 \quad A_{33} = \begin{vmatrix} 1 & 2 \\ 3 & 1 \end{vmatrix} = -5$$

$$\boxed{A^{-1} = \begin{pmatrix} -1/3 & 2/3 & -1/3 \\ -1/3 & 5/3 & -7/3 \\ 2/3 & -7/3 & 5/3 \end{pmatrix}}$$

$$b) \quad AX = B \Rightarrow \boxed{X = A^{-1}B}$$

$$X = \begin{pmatrix} -1/3 & 2/3 & -1/3 \\ -1/3 & 5/3 & -7/3 \\ 2/3 & -7/3 & 5/3 \end{pmatrix} \cdot \begin{pmatrix} 18 \\ 23 \\ 13 \end{pmatrix} = \begin{pmatrix} 15/3 \\ 6/3 \\ 9/3 \end{pmatrix} = \begin{pmatrix} 5 \\ 2 \\ 3 \end{pmatrix} \Rightarrow$$

$$\boxed{\begin{array}{l} x = 5 \\ y = 2 \\ z = 3 \end{array}}$$

1106 a) $b+9=4$ \rightarrow $b=-5$
 $3+5=8$ ✓
 $7-2=a$ \rightarrow $a=5$
 $8+7=15$ ✓

b) $3 \cdot 2 - 5 \cdot 7 = -9 \Rightarrow -5q = -15 ; q=3$

1106 $\begin{pmatrix} 1 & 2 & 0 \\ -3 & 1 & -1 \\ 2 & -2 & 1 \end{pmatrix} \cdot \begin{pmatrix} -1 & -2 & -2 \\ 1 & 1 & 1 \\ a & 6 & b \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 4-a & 1 & 7-b \\ a-4 & 0 & b-6 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

$\left. \begin{array}{l} 4-a=0 \\ a-4=0 \end{array} \right\} \rightarrow a=4$
 $\left. \begin{array}{l} 7-b=0 \\ b-6=1 \end{array} \right\} \rightarrow b=7$

$\begin{pmatrix} 1 & 2 & 0 \\ -3 & 1 & -1 \\ 2 & -2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 7 \\ 10 \\ -12 \end{pmatrix}$

$A \cdot X = B \Rightarrow X = A^{-1} \cdot B$

$X = \begin{pmatrix} -1 & -2 & -2 \\ 1 & 1 & 1 \\ 4 & 6 & 7 \end{pmatrix} \cdot \begin{pmatrix} 7 \\ 10 \\ -12 \end{pmatrix} = \begin{pmatrix} 3 \\ 5 \\ 4 \end{pmatrix}$

1106
 06

a) $A+B = \begin{pmatrix} a+1 & b \\ c+d & e \end{pmatrix}$

b) $A \cdot B = \begin{pmatrix} a & b \\ c & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ d & e \end{pmatrix} = \begin{pmatrix} a+bd & be \\ c & 0 \end{pmatrix}$

1106
 P1

a) $2A-B = \begin{pmatrix} 6 & 4 \\ 2k & 8 \end{pmatrix} + \begin{pmatrix} 2 & 2 \\ 1 & 3 \end{pmatrix} = \begin{pmatrix} 8 & 6 \\ 2k+1 & 11 \end{pmatrix}$

$|2A-B| = \begin{vmatrix} 8 & 6 \\ 2k+1 & 11 \end{vmatrix} = 88 - 12k - 6 = 82 - 12k$

1107
 P1

$|A| = \begin{vmatrix} 1 & -3 & 0 \\ 2 & 0 & 1 \\ 4 & 1 & 3 \end{vmatrix} = -12 + 18 - 1 = 5$

$A_{11} = \begin{vmatrix} 0 & 1 \\ 1 & 3 \end{vmatrix} = -1$

$A_{21} = - \begin{vmatrix} -3 & 0 \\ 1 & 3 \end{vmatrix} = 9$

$A_{31} = \begin{vmatrix} -3 & 0 \\ 0 & 1 \end{vmatrix} = -3$

$A_{12} = - \begin{vmatrix} 2 & 1 \\ 4 & 3 \end{vmatrix} = -2$

$A_{22} = \begin{vmatrix} 1 & 0 \\ 4 & 3 \end{vmatrix} = 3$

$A_{32} = - \begin{vmatrix} 1 & 0 \\ 2 & 1 \end{vmatrix} = -1$

$A_{13} = \begin{vmatrix} 2 & 0 \\ 4 & 1 \end{vmatrix} = 2$

$A_{23} = - \begin{vmatrix} 1 & -3 \\ 4 & 1 \end{vmatrix} = -13$

$A_{33} = \begin{vmatrix} 1 & -3 \\ 2 & 0 \end{vmatrix} = 6$

$A^{-1} = \begin{pmatrix} -1/5 & 9/5 & -3/5 \\ -2/5 & 3/5 & -1/5 \\ 2/5 & -13/5 & 6/5 \end{pmatrix}$

$X = A^{-1} \cdot B = \begin{pmatrix} -1/5 & 9/5 & -3/5 \\ -2/5 & 3/5 & -1/5 \\ 2/5 & -13/5 & 6/5 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ -1 \end{pmatrix} = \begin{pmatrix} 20/5 \\ 5/5 \\ -30/5 \end{pmatrix} = \begin{pmatrix} 4 \\ 1 \\ -6 \end{pmatrix}$

$\begin{pmatrix} x=4 \\ y=1 \\ z=-6 \end{pmatrix}$

M07
P1

a) $AB = \begin{pmatrix} 1 & x & -1 \\ 3 & 1 & 4 \end{pmatrix} \begin{pmatrix} 3 \\ x \\ 2 \end{pmatrix} = \begin{pmatrix} 3+x^2-2 \\ 9+x+8 \end{pmatrix} = \begin{pmatrix} x^2+1 \\ x+17 \end{pmatrix}$

b) $2AB = C \Rightarrow \begin{cases} 2(x^2+1) = 20 \rightarrow x^2+1=10; x^2=9; x=3 \\ 2(x+17) = 28 \rightarrow x+17=14; x=-3 \end{cases}$
 $x=3$ (crossed out)
 $x=-3$ (boxed)

Nov 07
P2

a) $|A| = \begin{vmatrix} 0 & 2 \\ 2 & 0 \end{vmatrix} = -4$
 $A_{11}=0 \quad A_{21}=-2$
 $A_{12}=-2 \quad A_{22}=0$
 $A^{-1} = \begin{pmatrix} 0 & 1/2 \\ 1/2 & 0 \end{pmatrix}$

$A^2 = \begin{pmatrix} 0 & 2 \\ 2 & 0 \end{pmatrix} \cdot \begin{pmatrix} 0 & 2 \\ 2 & 0 \end{pmatrix} = \begin{pmatrix} 4 & 0 \\ 0 & 4 \end{pmatrix}$

b) $2A+B = \begin{pmatrix} 0 & 4 \\ 4 & 0 \end{pmatrix} + \begin{pmatrix} p & 2 \\ 0 & q \end{pmatrix} = \begin{pmatrix} p & 6 \\ 4 & q \end{pmatrix}$

$2A+B = \begin{pmatrix} 2 & 6 \\ 4 & 3 \end{pmatrix} \Rightarrow \begin{cases} p=2 \\ q=3 \end{cases}$

c) $A^{-1}B = \begin{pmatrix} 0 & 1/2 \\ 1/2 & 0 \end{pmatrix} \cdot \begin{pmatrix} 2 & 6 \\ 4 & 3 \end{pmatrix} = \begin{pmatrix} 2 & 3/2 \\ 1 & 3 \end{pmatrix}$

d) $AX=B \Rightarrow X = A^{-1}B = \begin{pmatrix} 2 & 3/2 \\ 1 & 3 \end{pmatrix}$

M08
P1

a) $|M| = \begin{vmatrix} 2 & 1 \\ 2 & -1 \end{vmatrix} = -4$
b) $M_{11}=-1 \quad M_{21}=-1$
 $M_{12}=-2 \quad M_{22}=2$
 $M^{-1} = \begin{pmatrix} 1/4 & 1/4 \\ 2/4 & -2/4 \end{pmatrix}$

c) $M \cdot \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 8 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \end{pmatrix} = M^{-1} \cdot \begin{pmatrix} 4 \\ 8 \end{pmatrix} = \begin{pmatrix} 1/4 & 1/4 \\ 2/4 & -2/4 \end{pmatrix} \begin{pmatrix} 4 \\ 8 \end{pmatrix} = \begin{pmatrix} 3 \\ -2 \end{pmatrix} \Rightarrow \begin{cases} x=3 \\ y=-2 \end{cases}$

M08
P1

a) $A+B = \begin{pmatrix} 3 & 2 \\ 1 & 0 \end{pmatrix}$

b) $-3A = \begin{pmatrix} -3 & -6 \\ -9 & 3 \end{pmatrix}$

c) $AB = \begin{pmatrix} 1 & 2 \\ 3 & -1 \end{pmatrix} \cdot \begin{pmatrix} 3 & 0 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} -1 & 2 \\ 11 & -1 \end{pmatrix}$

Muestre
P2

a) $A^{-1} = \begin{pmatrix} 1/10 & 2/5 & 1/10 \\ -7/10 & 1/5 & 3/10 \\ -6/5 & 1/5 & 4/5 \end{pmatrix}$ (Hecho con calculadora)

b) $AX=B \Rightarrow X = A^{-1} \cdot B = \begin{pmatrix} 1/10 & 2/5 & 1/10 \\ -7/10 & 1/5 & 3/10 \\ -6/5 & 1/5 & 4/5 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} = \begin{pmatrix} 6/5 \\ 3/5 \\ 8/5 \end{pmatrix}$ (Multiplicado con calculadora)

$\begin{cases} x=6/5 \\ y=3/5 \end{cases}$

Muestra
08
P1

a) $|A| = \begin{vmatrix} 7 & 8 \\ 2 & 3 \end{vmatrix} = 5$
 $A_{11} = 3 \quad A_{21} = -8$
 $A_{12} = -2 \quad A_{22} = 7$
 $\bar{A} = \begin{pmatrix} 3/5 & -8/5 \\ -2/5 & 7/5 \end{pmatrix}$

b) $AX = B \Rightarrow X = \bar{A} \cdot B = \begin{pmatrix} 3/5 & -8/5 \\ -2/5 & 7/5 \end{pmatrix} \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} -1 \\ 1 \end{pmatrix} \Rightarrow \begin{cases} x = -1 \\ y = 1 \end{cases}$

Muestra
08
P1

$M^2 = \begin{pmatrix} 2 & -1 \\ -3 & 4 \end{pmatrix} \begin{pmatrix} 2 & -1 \\ -3 & 4 \end{pmatrix} = \begin{pmatrix} 7 & -6 \\ -18 & 19 \end{pmatrix}$

$M^2 - 6M + KI = 0$

$\begin{pmatrix} 7 & -6 \\ -18 & 19 \end{pmatrix} - \begin{pmatrix} 12 & -6 \\ -18 & 24 \end{pmatrix} + \begin{pmatrix} k & 0 \\ 0 & k \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$

$\begin{cases} 7 - 12 + k = 0 \\ -18 + 18 + 0 = 0 \checkmark \\ 19 - 24 + k = 0 \\ -6 + 6 + 0 = 0 \checkmark \end{cases} \Rightarrow \boxed{k = 5}$

Muestra
08
P1

a) $A^2 = \begin{pmatrix} 1 & -2 \\ 0 & 3 \end{pmatrix} \begin{pmatrix} 1 & -2 \\ 0 & 3 \end{pmatrix} = \begin{pmatrix} 1 & -8 \\ 0 & 9 \end{pmatrix}$

b) $3X + A = B \Rightarrow X = \frac{1}{3}(B - A) = \frac{1}{3} \left[\begin{pmatrix} -3 & 4 \\ 2 & 1 \end{pmatrix} - \begin{pmatrix} 1 & -2 \\ 0 & 3 \end{pmatrix} \right] =$
 $= \frac{1}{3} \begin{pmatrix} -4 & 6 \\ 2 & -2 \end{pmatrix} = \begin{pmatrix} -4/3 & 2 \\ 2/3 & -2/3 \end{pmatrix}$

Nbr 08
P2

a) $A^{-1} = \begin{pmatrix} -1 & 1 & -1 \\ 1 & -1/2 & 5/4 \\ 1 & -1/2 & 3/4 \end{pmatrix}$ (Hecho con calculadora)

b) $(I - \frac{1}{2}B)^{-1} = A \Rightarrow I - \frac{1}{2}B = A^{-1} \Rightarrow -\frac{1}{2}B = A^{-1} - I \Rightarrow \boxed{B = -2(A^{-1} - I)} \checkmark$

$B = -2(A^{-1} - I) = \begin{pmatrix} 4 & -2 & 2 \\ -2 & 3 & -2.5 \\ -2 & 1 & 0.5 \end{pmatrix}$ (Hecho con calculadora)

(Hecho con calculadora)

$|B| = 12$

B tiene inversa porque $|B| \neq 0$

c) $BX = C \Rightarrow X = B^{-1} \cdot C = \begin{pmatrix} 4 & -2 & 2 \\ -2 & 3 & -2.5 \\ -2 & 1 & 0.5 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 1/3 \\ 1 \\ 4/3 \end{pmatrix}$ (Hecho con calculadora)

$\begin{cases} 4x - 2y + 2z = 2 \\ -2x + 3y - 2.5z = -1 \\ -2x + y + 0.5z = 1 \end{cases}$

Nov 08
P1

$$a) AB = \begin{pmatrix} 1 & -2 \\ 3 & p \end{pmatrix} \begin{pmatrix} -2 & 1 \\ q & 1/2 \end{pmatrix} = \begin{pmatrix} -2-2q & 0 \\ pq-6 & \frac{p}{2}+3 \end{pmatrix}$$

$$b) B, A \text{ inversas} \Rightarrow A \cdot B = I$$

$$\begin{pmatrix} -2-2q & 0 \\ pq-6 & \frac{p}{2}+3 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\left. \begin{array}{l} -2-2q=0 \rightarrow \boxed{q=-1} \\ 0=0 \checkmark \\ pq-6=0 \xrightarrow{(-6) \cdot (-1)-6=0; 6-6=0 \checkmark} \\ \frac{p}{2}+3=0 \rightarrow \boxed{p=-6} \end{array} \right\}$$

M09
P1

$$a) M = (M^{-1})^{-1} = \begin{pmatrix} 5 & 0 \\ 1 & 2 \end{pmatrix}^{-1}$$

$$\begin{vmatrix} 5 & 0 \\ 1 & 2 \end{vmatrix} = 10$$

$$\begin{array}{l|l} A_{11} = 2 & A_{21} = 0 \\ A_{12} = -1 & A_{22} = 5 \end{array}$$

$$\Rightarrow M = \begin{pmatrix} 5 & 0 \\ 1 & 2 \end{pmatrix}^{-1} = \begin{pmatrix} 2/10 & 0 \\ -1/10 & 5/10 \end{pmatrix}$$

$$b) MX = B \Rightarrow X = M^{-1}B = \begin{pmatrix} 5 & 0 \\ 1 & 2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 7 \end{pmatrix} = \begin{pmatrix} 5 \\ 15 \end{pmatrix} \rightarrow \begin{cases} x=5 \\ y=15 \end{cases}$$

M09
P1

$$a) A \cdot B = \begin{pmatrix} 5 & 1 \\ 6 & 2 \end{pmatrix} \cdot \begin{pmatrix} 2 & -1 \\ -6 & 5 \end{pmatrix} = \begin{pmatrix} 4 & 0 \\ 0 & 4 \end{pmatrix}$$

$$|A| = \begin{vmatrix} 5 & 1 \\ 6 & 2 \end{vmatrix} = 4$$

$$\begin{array}{l|l} A_{11} = 2 & A_{21} = -1 \\ A_{12} = -6 & A_{22} = 5 \end{array}$$

$$\left\{ \begin{array}{l} A^{-1} = \begin{pmatrix} 2/4 & -1/4 \\ -6/4 & 5/4 \end{pmatrix} \end{array} \right.$$

$$b) AX = C \Rightarrow X = A^{-1}C = \begin{pmatrix} 2/4 & -1/4 \\ -6/4 & 5/4 \end{pmatrix} \begin{pmatrix} 8 \\ -4 \end{pmatrix} = \begin{pmatrix} 5 \\ -17 \end{pmatrix}$$

Nov 09
P2

$$a) A^{-1} = \begin{pmatrix} 3 & 2 & -3 \\ 2 & 1 & -2 \\ -8 & -6 & 9 \end{pmatrix}$$

(Hecho con calculadora)

$$b) AB = \begin{pmatrix} 7 & 6 & -7 \\ 6 & 5 & -8 \\ 1 & 7 & -5 \end{pmatrix} \cdot \begin{pmatrix} -3 & 2 & 1 \\ 5 & 3 & 4 \\ -9 & 2 & 10 \end{pmatrix} = \begin{pmatrix} 10 & 4 & -8 \\ 1 & 2 & -12 \\ 10 & 5 & -15 \end{pmatrix} \Rightarrow$$

$$\Rightarrow B = A^{-1} \cdot \begin{pmatrix} 10 & 4 & -8 \\ 1 & 2 & -12 \\ 10 & 5 & -15 \end{pmatrix} = \begin{pmatrix} 2 & 1 & -3 \\ 1 & 0 & 2 \\ 4 & 1 & 1 \end{pmatrix} \quad (\text{Hecho con calculadora})$$

M10
P1

$$a) AB = \begin{pmatrix} 1 & -2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} -5 \\ 5 \end{pmatrix} = \begin{pmatrix} -15 \\ 5 \end{pmatrix}$$

$$b) A^{-1}X = B \Rightarrow X = (A^{-1})^{-1}B = AB = \begin{pmatrix} -15 \\ 5 \end{pmatrix}$$