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Actividad en clase

$$\begin{vmatrix} 7 & 6 & 9 & 4 \\ 8 & 5 & 3 & 2 \\ 7 & 7 & 9 & 9 \\ 4 & 3 & 8 & 5 \end{vmatrix} \qquad \begin{vmatrix} 3 & 2 & 9 & 5 \\ 7 & 5 & 6 & 4 \\ 4 & 6 & 9 & 1 \\ 9 & 3 & 8 & 7 \end{vmatrix}$$

$$M_1 = \left(\begin{vmatrix} 7 & 6 \\ 8 & 5 \end{vmatrix} + \begin{vmatrix} 9 & 9 \\ 8 & 5 \end{vmatrix} \right) \times \left(\begin{vmatrix} 3 & 2 \\ 7 & 5 \end{vmatrix} + \begin{vmatrix} 9 & 1 \\ 8 & 7 \end{vmatrix} \right)$$

$$M_1 = \begin{vmatrix} 16 & 15 \\ 16 & 10 \end{vmatrix} \cdot \begin{vmatrix} 12 & 3 \\ 15 & 12 \end{vmatrix} = \begin{vmatrix} 417 & 228 \\ 342 & 168 \end{vmatrix}$$

$M_1 = 16 + 10 \cdot 12 + 12 = 624$

$M_2 = 16 + 10 \cdot 12 = 312$

$M_3 = 16 \cdot 3 - 12 = -144$

$M_4 = 10 \cdot (15 - 12) = 30$

$M_5 = (16 + 15) \cdot 12 = 372$

$M_6 = (16 - 16) \cdot (12 + 3) = 0$

$M_7 = (15 - 10) \cdot (15 + 12) = 135$

$C_{11} = 624 + 30 + 372 + 135 = 417$

$C_{21} = -144 + 372 = 228$

$C_{31} = 312 + 30 = 342$

$C_{41} = 624 - 312 + (-144) + 0 = 168$

$$M_2 = \left(\begin{vmatrix} 7 & 7 \\ 4 & 3 \end{vmatrix} + \begin{vmatrix} 9 & 9 \\ 8 & 5 \end{vmatrix} \right) \cdot \begin{vmatrix} 3 & 2 \\ 7 & 5 \end{vmatrix} = \begin{vmatrix} 16 & 16 \\ 12 & 8 \end{vmatrix} \cdot \begin{vmatrix} 3 & 2 \\ 7 & 5 \end{vmatrix}$$

$M_1 = (16 + 8) \cdot (3 + 5) = 192$

$M_2 = (12 + 8) \cdot 3 = 60$

Notas

$M_3 = 16 \cdot (2-6) = -48$
$M_4 = 8 \cdot (7-3) = 32$
$M_5 = (16+16) \cdot 5 = 160$
$M_6 = (12-16) \cdot (3+2) = -20$
$M_7 = (16-8) \cdot (7+5) = 96$

$C_1 = 192 + 32 - 160 + 96 = 160$
$C_2 = 48 + 160 = 112$
$C_3 = 60 + 32 = 92$
$C_4 = 192 - 60 - 48 - 20 = 64$

$$C = \begin{vmatrix} 160 & 112 \\ 92 & 64 \end{vmatrix}$$

$$M_3 = \begin{vmatrix} 7 & 6 \\ 8 & 5 \end{vmatrix} \cdot \left(\begin{vmatrix} 9 & 5 \\ 6 & 4 \end{vmatrix} - \begin{vmatrix} 9 & 1 \\ 8 & 7 \end{vmatrix} \right) = \begin{vmatrix} 7 & 6 \\ 8 & 5 \end{vmatrix} \cdot \begin{vmatrix} 0 & 4 \\ -2 & -3 \end{vmatrix}$$

$M_1 = (7+5) \cdot (0-3) = -36$

$M_2 = (8+5) \cdot 0 = 0$
$M_3 = 7 \cdot (4+3) = 49$
$M_4 = 5 \cdot (0-2) = -10$
$M_5 = (7+6) \cdot -3 = -39$
$M_6 = (8-7) \cdot (0+4) = 4$
$M_7 = (6-5) \cdot (-2+(-3)) = -5$

$C_1 = -36 - 10 + 39 - 5 = -12$
$C_2 = 49 - 39 = 10$
$C_3 = 0 - 10 = -10$
$C_4 = -36 - 0 + 49 + 4 = 17$

$$C = \begin{vmatrix} -12 & 10 \\ -10 & 17 \end{vmatrix}$$

$$M_4 = \begin{vmatrix} 9 & 9 \\ 8 & 5 \end{vmatrix} \cdot \left(\begin{vmatrix} 4 & 6 \\ 9 & 3 \end{vmatrix} - \begin{vmatrix} 3 & 3 \\ 7 & 5 \end{vmatrix} \right) = \begin{vmatrix} 9 & 9 \\ 8 & 5 \end{vmatrix} \cdot \begin{vmatrix} 1 & 4 \\ 2 & -2 \end{vmatrix}$$

$M_1 = (9+5) \cdot (1-2) = -14$
$M_2 = (8+5) \cdot 1 = 13$
$M_3 = 9 \cdot (4+2) = 54$
$M_4 = 5 \cdot (2-1) = 5$
$M_5 = (9+9) \cdot -2 = -36$
$M_6 = (8-9) \cdot (1+4) = -5$
$M_7 = (9-5) \cdot (2-2) = 0$

$C_1 = -14 + 5 + 36 + 0 = 27$
$C_2 = 54 - 36 = 18$
$C_3 = 13 + 5 = 18$
$C_4 = -14 - 13 + 54 - 5 = 22$

$$C = \begin{vmatrix} 27 & 18 \\ 18 & 22 \end{vmatrix}$$

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$M_5 = \left(\begin{vmatrix} 7 & 6 \\ 8 & 5 \end{vmatrix} + \begin{vmatrix} 9 & 4 \\ 3 & 2 \end{vmatrix}\right) \cdot \begin{vmatrix} 9 & 1 \\ 8 & 7 \end{vmatrix} = \begin{vmatrix} 16 & 10 \\ 11 & 17 \end{vmatrix} \cdot \begin{vmatrix} 9 & 1 \\ 8 & 7 \end{vmatrix} =$

$M_1 = (16+7) \cdot (9+7) = 368$
$M_2 = (11+7) \cdot 9 = 162$
$M_3 = 16 \cdot (1-7) = -96$
$M_4 = 7 \cdot (8-9) = -7$
$M_5 = (16+10) \cdot 7 = 182$
$M_6 = (11-16) \cdot (9+1) = -50$
$M_7 = (10-7) \cdot (8+7) = 45$

$C_1 = 368 - 7 + 182 + 45 = 224$
$C_2 = -96 + 182 = 86$
$C_3 = 162 - 7 = 155$
$C_4 = 368 - 162 - 96 - 50 = 60$

$C = \begin{vmatrix} 224 & 86 \\ 155 & 60 \end{vmatrix}$

$M_6 = \left(\begin{vmatrix} 7 & 6 \\ 8 & 4 \end{vmatrix} - \begin{vmatrix} 7 & 7 \\ 4 & 3 \end{vmatrix}\right) \cdot \left(\begin{vmatrix} 3 & 2 \\ 7 & 5 \end{vmatrix} + \begin{vmatrix} 9 & 5 \\ 6 & 4 \end{vmatrix}\right) = \begin{vmatrix} 0 & 1 \\ -4 & -2 \end{vmatrix}$ 12 13

$M_1 = (0-2) \cdot (12+9) = -42$
$M_2 = (-4-2) \cdot 12 = -72$
$M_3 = 0 \cdot (7-9) = 0$
$M_4 = -2 \cdot (13-12) = -2$
$M_5 = (0+1) \cdot 9 = 9$
$M_6 = (-4-0) \cdot (12+7) = -76$
$M_7 = (1-(-2)) \cdot (13+9) = 66$

$C_1 = -42 - 2 - 9 + 66 = 13$
$C_2 = 0 + 9 = 9$
$C_3 = -72 - 2 = -74$
$C_4 = -42 + 72 + 0 - 76 = -46$

$C = \begin{vmatrix} 13 & 9 \\ -74 & -46 \end{vmatrix}$

$M_7 = \left(\begin{vmatrix} 9 & 4 \\ 3 & 2 \end{vmatrix} - \begin{vmatrix} 9 & 9 \\ 8 & 5 \end{vmatrix}\right) \cdot \left(\begin{vmatrix} 4 & 6 \\ 9 & 3 \end{vmatrix} + \begin{vmatrix} 9 & 1 \\ 8 & 7 \end{vmatrix}\right) = \begin{vmatrix} 0 & \\ -5 & \end{vmatrix}$

$= \begin{vmatrix} 0 & -5 \\ -5 & -3 \end{vmatrix} \cdot \begin{vmatrix} 13 & 7 \\ 17 & 10 \end{vmatrix}$

$M_1 = (0-3) \cdot (13+10) = -69$
$M_2 = (-5+(-3)) \cdot 13 = -104$
$M_3 = 0 \cdot (7-10) = 0$
$M_4 = -3 \cdot (17-13) = -12$
$M_5 = (0-5) \cdot 10 = -50$
$M_6 = (-5-0) \cdot (13+7) = -100$
$M_7 = (-5+3) \cdot (17+10) = -54$

Notas

$C_1 = -69 - 12 + 150 - 54 = -85$

$C_2 = 0 - 50 = -50$

$C_3 = -104 - 12 = -116$

$C_4 = -69 + 104 + 0 - 100 = -65$

$$C = \begin{vmatrix} -85 & -50 \\ -116 & -65 \end{vmatrix}$$

$$C_{11} = \begin{vmatrix} 417 & 228 \\ 342 & 168 \end{vmatrix} + \begin{vmatrix} 27 & 18 \\ 18 & 22 \end{vmatrix} - \begin{vmatrix} 224 & 86 \\ 155 & 60 \end{vmatrix} + \begin{vmatrix} -85 & -50 \\ -116 & -65 \end{vmatrix}$$

$$= \begin{vmatrix} 135 & 110 \\ 89 & 65 \end{vmatrix}$$

$$C_{12} = \begin{vmatrix} -12 & 10 \\ -10 & 17 \end{vmatrix} + \begin{vmatrix} 224 & 86 \\ 155 & 60 \end{vmatrix} = \begin{vmatrix} 212 & 96 \\ 145 & 77 \end{vmatrix}$$

$$C_{21} = \begin{vmatrix} 160 & 112 \\ 92 & 64 \end{vmatrix} + \begin{vmatrix} 27 & 18 \\ 18 & 22 \end{vmatrix} = \begin{vmatrix} 187 & 130 \\ 110 & 86 \end{vmatrix}$$

$$C_{22} = \begin{vmatrix} 417 & 228 \\ 342 & 168 \end{vmatrix} - \begin{vmatrix} 160 & 112 \\ 92 & 64 \end{vmatrix} + \begin{vmatrix} -12 & 10 \\ -10 & 17 \end{vmatrix} + \begin{vmatrix} 13 & 9 \\ -74 & -46 \end{vmatrix} =$$

$$\begin{vmatrix} 258 & 135 \\ 166 & 75 \end{vmatrix}$$

$$\begin{vmatrix} 135 & 110 & 212 & 96 \\ 89 & 65 & 145 & 77 \\ 187 & 130 & 258 & 135 \\ 110 & 86 & 166 & 75 \end{vmatrix}$$