لا يكتب في هذا الهامش

Q1

$$A.B = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 2 & 2 \\ 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 4 & 1 \\ 2 & 3 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 11 & 7 \\ 22 & 10 \\ 11 & 5 \end{pmatrix}$$ 3 Marks

$$B + C = \begin{pmatrix} 4 & 1 \\ 2 & 3 \\ 1 & 0 \end{pmatrix} + \begin{pmatrix} 10 & 1 \\ 3 & -2 \\ 1 & 3 \end{pmatrix} = \begin{pmatrix} 14 & 2 \\ 5 & 1 \\ 2 & 3 \end{pmatrix}$$ 1 Mark

Q2

$$\begin{vmatrix} 1 & 2 & 1 \\ 2 & 0 & 1 \\ 5 & 3 & 1 \end{vmatrix} \begin{matrix} 1 & 2 \\ 2 & 0 \\ 5 & 3 \end{matrix} = (0 + 10 + 6) - (0 + 3 + 4) = 16 - 7 = \boxed{9}$$ 5 Marks

Q3

$$|A| = \begin{vmatrix} 1 & -2 & 1 \\ 1 & -3 & -1 \\ 1 & 2 & 0 \end{vmatrix} = 9$$ 1.5 Marks, $$|A_1| = \begin{vmatrix} 0 & -2 & 1 \\ -3 & -3 & -1 \\ 3 & 2 & 0 \end{vmatrix} = 9$$ 1.5 Marks

$$|A_2| = \begin{vmatrix} 1 & 0 & 1 \\ 1 & -3 & -1 \\ 1 & 3 & 0 \end{vmatrix} = 9$$ 1.5 Marks, $$|A_3| = \begin{vmatrix} 1 & -2 & 0 \\ 1 & -3 & -3 \\ 1 & 2 & 3 \end{vmatrix} = 9$$ 1.5 Marks

$$\therefore \; x = \frac{|A_1|}{|A|} = \frac{9}{9} = 1 \; ; \; y = \frac{|A_2|}{|A|} = \frac{9}{9} = 1 \; ; \; z = \frac{|A_3|}{|A|} = \frac{9}{9} = 1$$

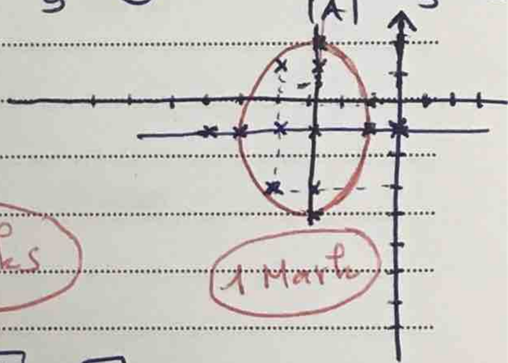
Q4

$$9x^2 + 4y^2 + 54x + 8y + 49 = 0$$

$$9(x^2 + 6x + 9) + 4(y^2 + 2y + 1) = -49 + 81 + 4$$

$$9(x+3)^2 + 4(y+1)^2 = 36$$

$$\frac{(x+3)^2}{4} + \frac{(y+1)^2}{9} = 1 \longrightarrow$$ 2 Marks



1 Mark

$\Rightarrow h = -3 \; ; \; K = -1 \; ; \; a = 3 \; ; \; b = 2 \; ; \; c = \sqrt{9-4} = \sqrt{5}$.

$\Rightarrow P(-3;-1)$, $V_1(-3;2)$; $V_2(-3;-4)$, $W_1(-1;-1)$; $W_2(-5;-1)$

0.5 0.5 0.5

$F_1(-3; -1+\sqrt{5})$; $F_2(-3; -1-\sqrt{5})$

0.5

Q5

$$\frac{(y-k)^2}{b^2} - \frac{(x-h)^2}{a^2} = 1$$ 1

$h = 2 \; ; \; K = 4 \; ;$ 0.5

$b = PV_1 = 3 \rightarrow$ 0.5

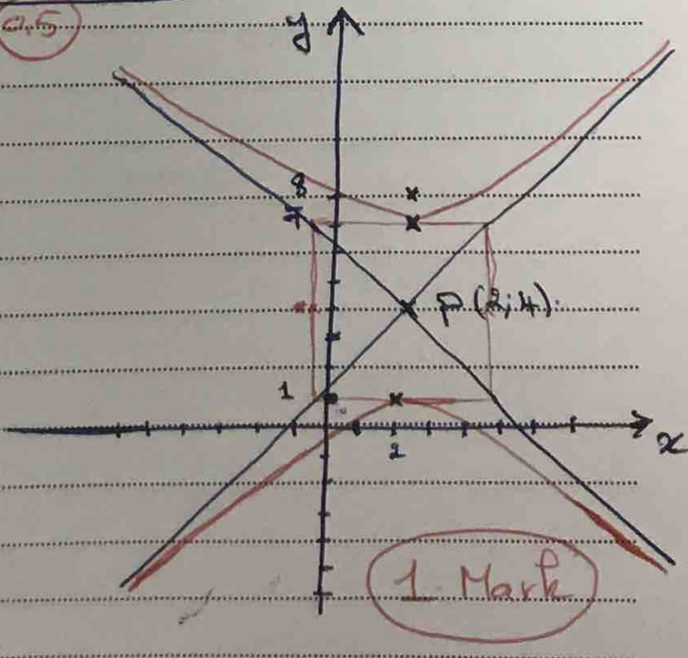
$c = PF_1 = 4 \rightarrow$ 0.5

$a^2 = c^2 - b^2 = 16 - 9 = 7$

$a = \sqrt{7}$ 0.5

$$\therefore \frac{(y-4)^2}{9} - \frac{(x-2)^2}{7} = 1$$

1 Mark



1 Mark