Q25) $x+y+z=18$
$x-y+z=6$
$x+y-z=4$

A25) $D=\begin{vmatrix}1&1&1\\1&-1&1\\1&1&-1\end{vmatrix}=4$

$D_1=\begin{vmatrix}18&1&1\\6&-1&1\\4&1&-1\end{vmatrix}=20$ $\quad x=\frac{20}{4}=5$

$D_2=\begin{vmatrix}1&18&1\\1&6&1\\1&4&-1\end{vmatrix}=24$ $\quad y=\frac{24}{4}=6$

$D_3=\begin{vmatrix}1&1&18\\1&-1&6\\1&1&4\end{vmatrix}=28$ $\quad z=\frac{28}{4}=7$

Q26) $2x-4y+3z=10$
$3x+y-2z=6$
$x+3y-z=20$

A26) $D=\begin{vmatrix}2&-4&3\\3&1&-2\\1&3&-1\end{vmatrix}=30$

$D_1=\begin{vmatrix}10&-4&3\\6&1&-2\\20&3&-1\end{vmatrix}=180$ $\quad x=\frac{180}{30}=6$

$D_2=\begin{vmatrix}2&10&3\\3&6&-2\\1&20&-1\end{vmatrix}=240$ $\quad y=\frac{240}{30}=8$

$D_3=\begin{vmatrix}2&-4&10\\3&1&6\\1&3&20\end{vmatrix}=300$ $\quad z=\frac{300}{30}=10$

Q27) $x+y+z=18$
$x-y+z=6$
$x+y-z=4$

A27) $\left[\begin{array}{ccc|c}1&1&1&18\\1&-1&1&6\\1&1&-1&4\end{array}\right]\xrightarrow[-R_1+R_3]{-R_1+R_2}\left[\begin{array}{ccc|c}1&1&1&18\\0&-2&0&-12\\0&0&-2&-14\end{array}\right]\xrightarrow[-\frac{1}{2}R_3]{-\frac{1}{2}R_2}\left[\begin{array}{ccc|c}1&1&1&18\\0&1&0&6\\0&0&1&7\end{array}\right]$

$z=7$
$y=6$
$x+(6)+(7)=18$
$x=5$

Q28) $x+y+z=12$
$x-y=2$
$x-z=4$

A28) $\left[\begin{array}{ccc|c}1&1&1&12\\1&-1&0&2\\1&0&-1&4\end{array}\right]\xrightarrow[-R_1+R_3]{-R_1+R_2}\left[\begin{array}{ccc|c}1&1&1&12\\0&-2&-1&-10\\0&-1&-2&-8\end{array}\right]\xrightarrow{-\frac{1}{2}R_3+R_2}\left[\begin{array}{ccc|c}1&1&1&12\\0&-2&-1&-10\\0&0&-\frac{3}{2}&-3\end{array}\right]\xrightarrow[-\frac{2}{3}R_3]{-\frac{1}{2}R_2}\left[\begin{array}{ccc|c}1&1&1&12\\0&1&\frac{1}{2}&5\\0&0&1&2\end{array}\right]$

$z=2$
$y+1=5$
$y=4$
$x+4+2=12$
$x=6$

Q29) $x-3y+z=21$
$9x+2y+z=14$
$3x+3y+z=7$

A29) $\left[\begin{array}{ccc|c}1&-3&1&21\\9&2&1&14\\3&3&1&7\end{array}\right]\xrightarrow[-3R_1+R_3]{-9R_1+R_2}\left[\begin{array}{ccc|c}1&-3&1&21\\0&14&-3&-70\\0&12&-2&-56\end{array}\right]\xrightarrow{\frac{1}{2}R_3}\left[\begin{array}{ccc|c}1&-3&1&21\\0&14&-3&-70\\0&6&-1&-28\end{array}\right]\xrightarrow[-3R_3+R_2]{R_2+R_1}\left[\begin{array}{ccc|c}1&3&0&-7\\0&-4&0&14\\0&6&-1&-28\end{array}\right]$

$\xrightarrow{-\frac{1}{4}R_2}\left[\begin{array}{ccc|c}1&3&0&-7\\0&1&0&-\frac{7}{2}\\0&6&-1&-28\end{array}\right]\xrightarrow[-6R_2+R_3]{-3R_2+R_1}\left[\begin{array}{ccc|c}1&0&0&\frac{7}{2}\\0&1&0&-\frac{7}{2}\\0&0&-1&-7\end{array}\right]\xrightarrow{-R_3}\left[\begin{array}{ccc|c}1&0&0&\frac{7}{2}\\0&1&0&-\frac{7}{2}\\0&0&1&7\end{array}\right]$

$x=\frac{7}{2}$
$y=-\frac{7}{2}$
$z=7$

Q30) $2x-4y+3z=10$
$3x+y-2z=6$
$x+3y-z=20$

A30) $\left[\begin{array}{ccc|c}2&-4&3&10\\3&1&-2&6\\1&3&-1&20\end{array}\right]\xrightarrow[-R_1+R_3]{-R_1+R_2}\left[\begin{array}{ccc|c}14&0&-5&34\\3&1&-2&6\\-8&0&5&2\end{array}\right]\xrightarrow[R_1+R_3]{-\frac{2}{5}R_1+R_2}\left[\begin{array}{ccc|c}14&0&-5&34\\-\frac{13}{5}&1&0&-\frac{38}{5}\\6&0&0&36\end{array}\right]\xrightarrow{\frac{1}{6}R_3}\left[\begin{array}{ccc|c}14&0&-5&34\\-\frac{13}{5}&1&0&-\frac{38}{5}\\1&0&0&6\end{array}\right]$

$\xrightarrow[\frac{13}{5}R_3+R_2]{-14R_3+R_1}\left[\begin{array}{ccc|c}0&0&-5&-50\\0&1&0&8\\1&0&0&6\end{array}\right]\xrightarrow{-\frac{1}{5}R_1}\left[\begin{array}{ccc|c}0&0&1&10\\0&1&0&8\\1&0&0&6\end{array}\right]$

$x=6$
$y=8$
$z=10$

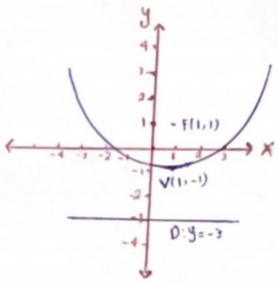
Q11) $(x-1)^2 = 8(y+1)$

A11) $h=1 \quad K=-1 \quad a=2$

$V(1,-1)$

$F(1,1)$

$D: y=-3$



Q12) $\frac{x^2}{100} + \frac{y^2}{49} = 1$

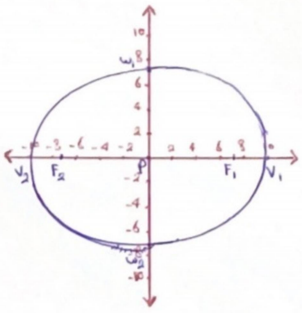
A12) $P(0,0) \quad a=10$

$V_1(10,0) \quad b=7$

$V_2(-10,0) \quad c=\sqrt{100-49}=\sqrt{51}$

$\omega_1(0,7) \quad F_1(\sqrt{51},0)$

$\omega_2(0,-7) \quad F_2(-\sqrt{51},0)$



Q13) $\frac{(x+3)^2}{16} + \frac{(y-2)^2}{9} = 1$

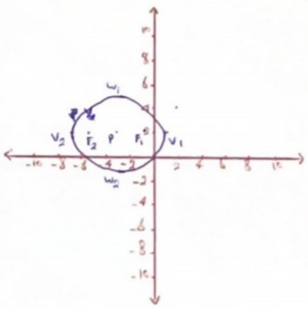
$h=-3 \quad K=2$

A13) $a=4 \quad b=3 \quad c=\sqrt{16-9}=\sqrt{7}$

$P(-3,2) \quad \omega_1(-3,5) \quad F_1(-3+\sqrt{7},2)$

$V_1(1,2) \quad \omega_2(-3,-1) \quad F_2(-3-\sqrt{7},2)$

$V_2(-7,2)$



Q14) $y^2 - 5x^2 + 6y - 40x - 76 = 0$

A14) $y^2 + 6y - 5x^2 - 40x = 76$

$(y^2+6y+9) - 5x^2 - 40x = 76 + 9$

$(y+3)^2 - 5(x^2 - 8x + 16) = 85 + 16x(-5)$

$(y+3)^2 - 5(x+4)^2 = 5$

$\frac{(y+3)^2}{5} - (x+4)^2 = 1$

$P(-4,-3)$

$V_1(-4,-3+\sqrt{5})$

$V_2(-4,-3-\sqrt{5})$

$F_1(-4,-3+\sqrt{6})$

$F_2(-4,-3-\sqrt{6})$

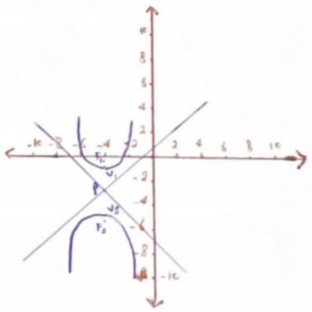
$h=-4 \quad K=-3$

$a=1 \quad b=\sqrt{5}$

$c=\sqrt{1+5}$

$=\sqrt{6}$

$(y+3) = \pm\sqrt{5}(x+4)$



Q15-24) if $A=\begin{bmatrix} 1 & 3 & 2 \\ 5 & -4 & 6 \\ 0 & 9 & 2 \end{bmatrix}$, $B=\begin{bmatrix} 5 & 0 \\ 1 & 4 \\ 10 & 11 \end{bmatrix}$, $C=\begin{bmatrix} -2 & 0 \\ 0 & 7 \\ 5 & 3 \end{bmatrix}$, compute the following:

Q15) $B+C$

A15)

Q20) BA

A20) cannot be solved

Q21) A^t