

31) $BX - C = 3C$
 $+C \quad +C$

$BX = 4C$

$X = B^{-1}(4C)$

$X = \frac{1}{-4} \begin{bmatrix} -3 & -1 \\ 2 & 2 \end{bmatrix} \begin{bmatrix} 0 & 4 \\ -4 & 4 \end{bmatrix}$

$X = \frac{-1}{4} \begin{bmatrix} 0+4 & -12-4 \\ 0-8 & 8+8 \end{bmatrix}$

$X = \frac{-1}{4} \begin{bmatrix} 4 & 8 \\ -8 & 16 \end{bmatrix}$

$X = \begin{bmatrix} -1 & -2 \\ 2 & -4 \end{bmatrix}$

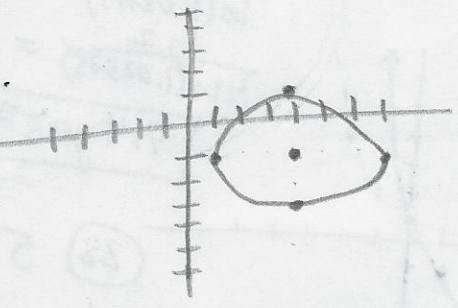
32) $4x^2 - 32x + 9y^2 + 18y = -37$
 $4(x^2 - 8x + 16) + 9(y^2 + 2y + 1) = -37 + 64 + 9$
 $4(x-4)^2 + 9(y+1)^2 = 36$
 $\frac{(x-4)^2}{9} + \frac{(y+1)^2}{4} = 1$

C: (4, -1)

V: (7, -1), (1, -1)

F: $a^2 - b^2 = c^2$
 $9 - 4 = c^2$
 $\sqrt{5} = c$

F: $(4 \pm \sqrt{5}, -1)$



If it had been a hyperbola,

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

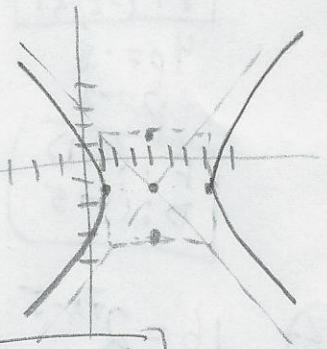
C: (4, -1)

V: (7, -1), (1, -1)

F: $a^2 + b^2 = c^2$
 $9 + 4 = c^2$
 $\sqrt{13} = c$

$(4 \pm \sqrt{13}, -1)$

Asym: $y + 1 = \pm \frac{2}{3}(x - 4)$



33) $\sin 75 = \sin(45 + 30)$

$\sin 45 \cos 30 + \cos 45 \sin 30$

$(\frac{\sqrt{2}}{2})(\frac{\sqrt{3}}{2}) + (\frac{\sqrt{2}}{2})(\frac{1}{2})$

$\frac{\sqrt{6} + \sqrt{2}}{4}$ or $\frac{\sqrt{2}(\sqrt{3} + 1)}{4}$

34) $2\cos 3x - 1 = 0$
 $\cos 3x = \frac{1}{2}$

$3x = \frac{\pi}{3} + 2\pi n$
 $x = \frac{\pi}{9} + \frac{2\pi n}{3}$
 $x = \frac{\pi}{9} + \frac{6\pi n}{9}$
 $3x = \frac{5\pi}{3} + 2\pi n$
 $x = \frac{5\pi}{9} + \frac{2\pi n}{3}$
 $x = \frac{5\pi}{9} + \frac{6\pi n}{9}$

$\frac{\pi}{9}$
 $\frac{7\pi}{9}$
 $\frac{13\pi}{9}$

$n=0$
 $n=1$
 $n=2$

$\frac{5\pi}{9}$
 $\frac{11\pi}{9}$
 $\frac{17\pi}{9}$