1. Graph $\frac{x^2}{9}+\frac{y^2}{4}=1$

C: (0,0) $\sqrt{9}=3$ $\sqrt{4}=2$

3 left 2 up
3 right 2 down

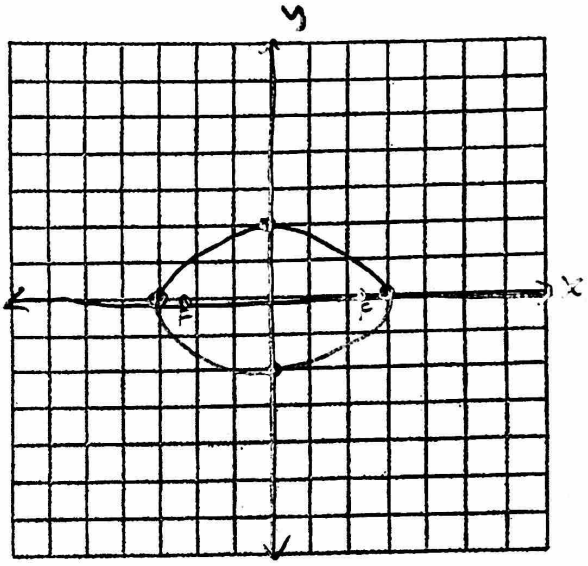
$a^2=9$
$b^2=4$ V: $(\pm 3, 0)$

Co-V: $(0, \pm 2)$

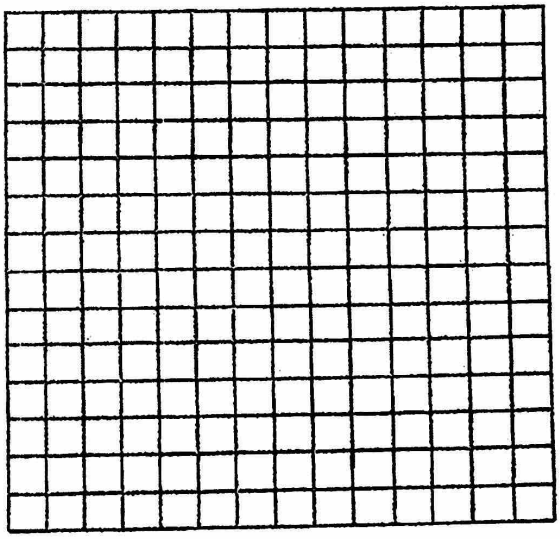
length of major axis = 6
" " minor axis = 4

always on the major axis

foci: $c^2=a^2-b^2$
$c^2=9-4$
$c^2=5$ $(\pm\sqrt{5}, 0)$
$c=\sqrt{5}$



2. Graph $\frac{y^2}{9}+\frac{x^2}{4}=1$

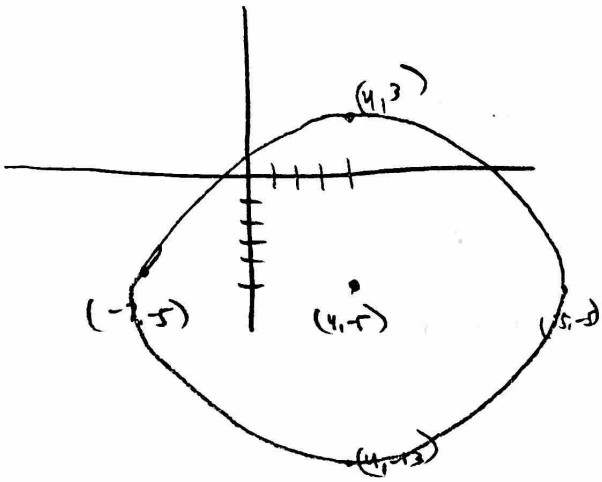


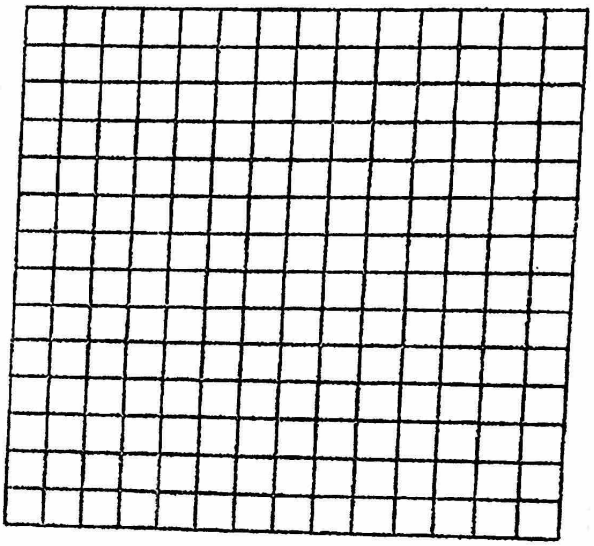
3. Graph $\frac{(x-4)^2}{121}+\frac{(y+5)^2}{64}=1$

$\sqrt{121}$ $\sqrt{64}$

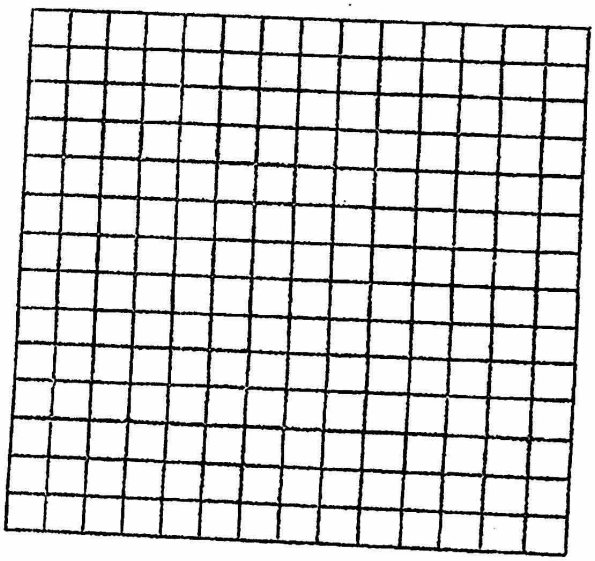
11 8

C: (4, -5)





4. Graph $\frac{(y+2)^2}{25}+\frac{(x-3)^2}{16}=1$



Find the coordinates of the center, the foci, and the vertices of the ellipse with the equation:

5. $4x^2+y^2-8x+6y+9=0$

$4x^2-8x \quad +y^2+6y \underline{+9} = -9 \quad +4 \quad \underline{+9}$

$4(x^2-2x+1)+(y+3)^2 = +9 \quad +4 \quad +9$

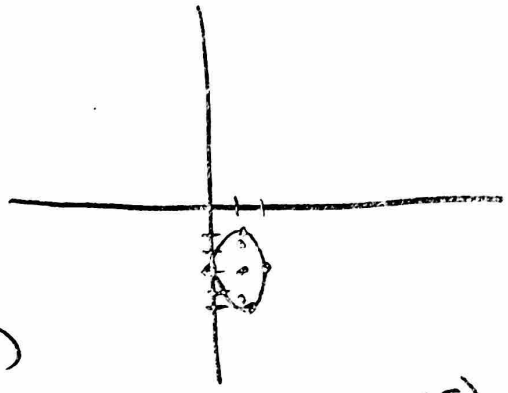
$\frac{4(x-1)^2}{4} + \frac{(y+3)^2}{4} = \frac{4}{4}$

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

$b^2=1 \quad a^2=4$ V: $(1,-1)$

$b=1 \quad a=2$ $(1,-5)$

6. $4x^2+9y^2-8x-54y+49=0$ Co-V: $(0,-3)$, $(2,-3)$



$c^2=a^2-b^2$ F: $(1,-3\pm\sqrt{3})$

$c^2=4-1$

$c^2=3$

$c=\sqrt{3}$

HW Practice Exercises
1-15 odd

7. $9x^2+4y^2-18x+16y=11$