10. $x^2-4x+9y^2+36y+4=0$

REWRITE IN STANDARD FORM

① GROUP x'S, GROUP y'S, TAKE NUMBER TO RIGHT SIDE

② FACTOR OUT THE NUMBER IN FRONT OF SQUARED'S

③ COMPLETE THE SQUARE ON x'S
COMPLETE THE SQUARE ON y'S

$x^2-4x+9y^2+36y=-4$

$x^2-4x+9(y^2+4y)=-4$

x's: $(-4\cdot\frac{1}{2})^2$, $(-2)^2$, 4

$x^2-4x+4-4+9(y^2+4y+4-4)=-4$

y's: $(4\cdot\frac{1}{2})^2$, $(2)^2$, 4

$(x-2)^2-4+9(y^2+4y+4)+9(-4)=-4$

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

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

$(x-2)^2+9(y+2)^2=36$

④ GET A "ONE" ON RIGHT SIDE

LEFT

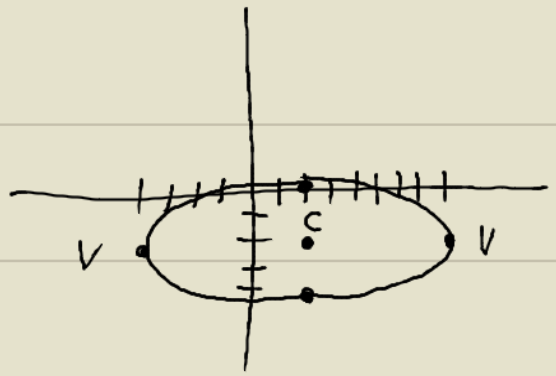
$\frac{(x-2)^2}{36}+\frac{9(y+2)^2}{36}=\frac{36}{36}$

$\frac{(x-2)^2}{36}+\frac{(y+2)^2}{4}=1$

$h=2$, $K=-2$

$\frac{(x-2)^2}{(6)^2}+\frac{(y+2)^2}{(2)^2}=1$

$a=6$, $b=2$



$c=\sqrt{a^2-b^2}$

$c=\sqrt{36-4}$

$c=\sqrt{32}$

$c=4\sqrt{2}$

CENTER: (h,K)

$(2,-2)$

FOCI: $(h+c,K)$ $(h-c,K)$

$(2+4\sqrt{2},-2)$ $(2-4\sqrt{2},-2)$

VERTICES $(h+a,K)$ $(h-a,K)$

$(2+6,-2)$ $(2-6,-2)$

$(8,-2)$ $(-4,-2)$