Subject موضوع الدرس Date التاريخ

lecture 5

Ellipse :

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

$\Rightarrow a > b \Rightarrow$ horizontal ellipse

$\Rightarrow c^2 = a^2 - b^2$

EX. $\frac{(x+1)^2}{9} + \frac{(y-2)^2}{25} = 1$ find center, The line contain major and Minor axis, The vertices, The end point of minor axes, Fusi

$a < b$ center $(-1, 2)$

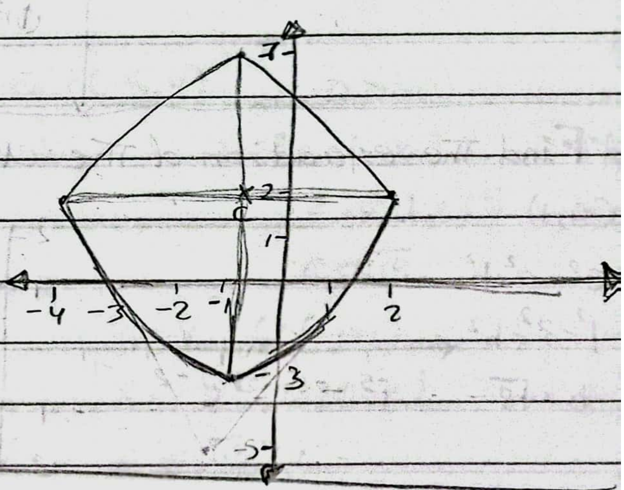
$c^2 = b^2 - a^2 = 25 - 9 = 16$

$F_1 = (-1, 6)$; $F_2(-1, -2)$

$V_1 = (-1, 7)$ $V_2(-1, -5)$

$x = -1$ (Major)

$y = 2$ (Minor)



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

center $(2, -3)$

$b > a$

$c^2 = b^2 - a^2 = 9 - 4 = 5$

$c = \sqrt{5}$

$F_1 = (2, -3+\sqrt{5})$, $F_2 = (2, -3-\sqrt{5})$

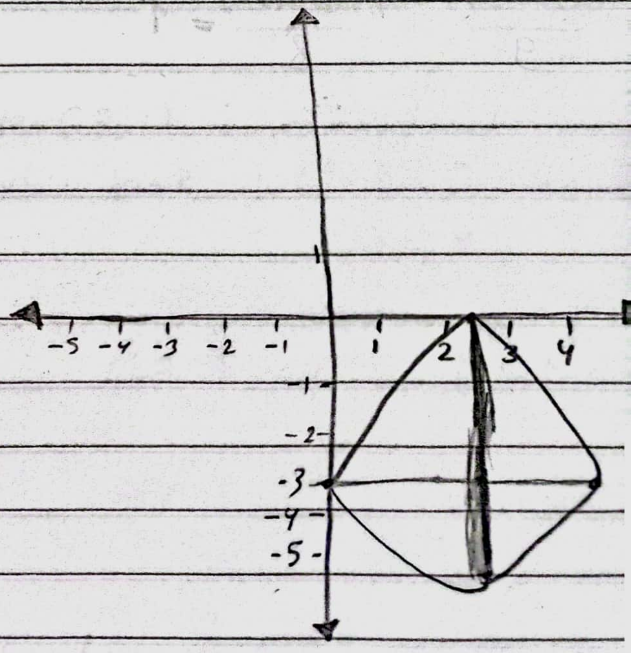
$V_1 = (2, 0)$, $V_2 = (2, -6)$

$V_3 = (0, -3)$, $V_4 = (4, -3)$

Major $x = 2$

Minor $y = -3$

$e = \pm \frac{\sqrt{5}}{3}$



محمد و اميرة

Subject	موضوع الدرس	Date	التاريخ

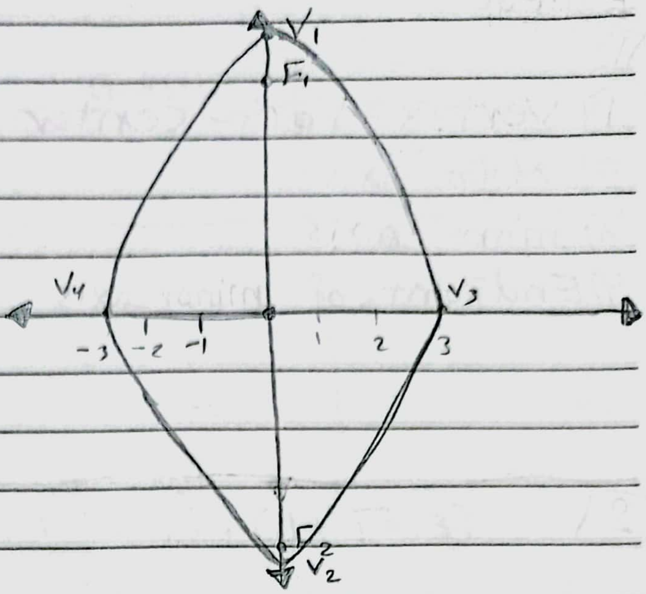
* $\frac{x^2}{9} + \frac{y^2}{25} = 1$

Center = (0,0)

$b > a$

$c^2 = b^2 - a^2 = 25 - 9 = 16$

$\boxed{c = \pm 4}$



$F_1(0,4)$, $F_2(0,-4)$

$V_1(0,5)$; $V_2(0,-5)$

$V_3(0,3)$, $V_4(0,-3)$

Major = $x = 0$

Mainor = $y = 0$

$e = \pm \frac{4}{5}$

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* $12x^2 + 3y^2 - 30y + 39 = 0$ $\div 3$

$4x^2 + y^2 - 10y + 13 = 0$

$4x^2 + (y-5)^2 - 25 + 13 = 0$

$4x^2 + (y-5)^2 = 12$ $\div 12$

$\frac{x^2}{3} + \frac{(y-5)^2}{12} = 1$

center (0,5)

$b > a \rightarrow c^2 = b^2 - a^2 = 12 - 3 = 9$

$c = \pm 3$

$F(0,8)$, $F_2 = (0,2)$

$V_1(0, 5+\sqrt{12})$, $(0, 5-\sqrt{12})$

$V_3(\sqrt{3}, 5)$, $V_4(-\sqrt{3}, 5)$

Major = $x = 0$, Minor = $y = 5$

* Find The Standard form of The eq. of The ellipse which has given properties Foci $(0, \pm 5)$, vertex $(0, \pm 8)$

$\frac{x^2}{39} + \frac{y^2}{64} = 1$

$25 = 64 - x$

$x = 39$