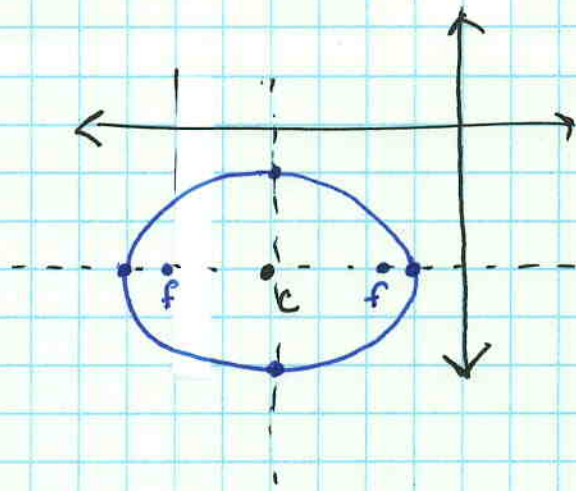


438: 2-4, 15-18, 44-46

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

$$\begin{aligned} \vec{C} &= h, k & (-4, -3) \\ a &= 3 \\ b &= 2 \\ c &= \sqrt{5} \\ &\approx 2.24 \end{aligned}$$



$$3. x^2 + 9y^2 - 14x + 36y + 49 = 0$$

$$x^2 - 14x + 49 - 49 + 9y^2 + 36y = 49$$

$$(x-7)^2 - 49 + 9(y^2 + 4x + 4 - 4) = 49$$

$$(x-7)^2 - 49 + 9((y+2)^2 - 4) = 49$$

$$(x-7)^2 + 9(y+2)^2 - 49 - 36 = -49 + 85$$

$$\frac{(x-7)^2}{36} + \frac{9(y+2)^2}{4 \cdot 36} = \frac{36}{36}$$

$$\frac{(x-7)^2}{6^2} + \frac{(y+2)^2}{2^2} = 1$$

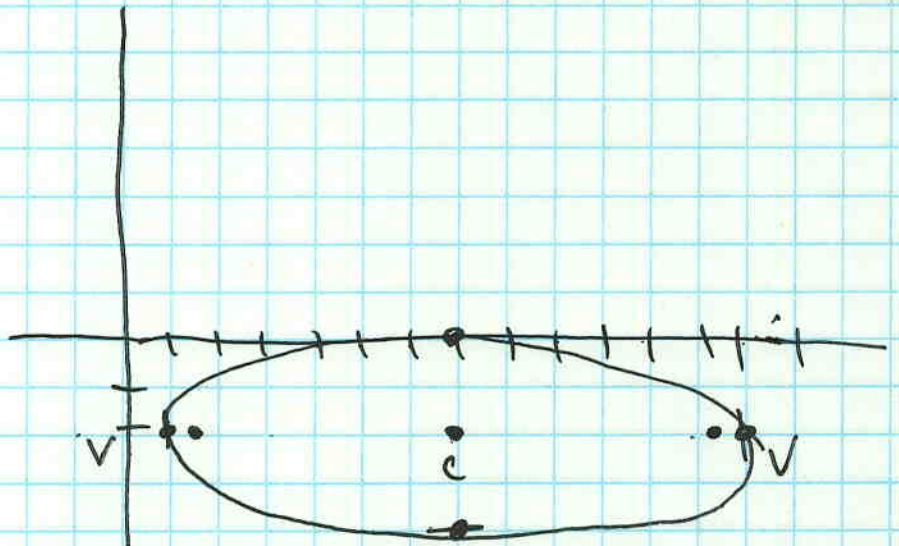
center (7, -2)

$$a = 6$$

$$b = 2$$

$$c = \sqrt{40} \approx 6.32$$

$$\sqrt{32} \approx 5.6$$



$$4. 4x^2 + y^2 - 64x - 12y + 276 = 0$$

$$4(x^2 - 16x + 64 - 64) + (y^2 - 12y + 36 - 36) = -276$$

$$4(x-8)^2 + (y-6)^2 - 256 - 36 = -276$$

$$\frac{4(x-8)^2}{16 \cdot 4} + \frac{(y-6)^2}{16} = \frac{16}{16}$$

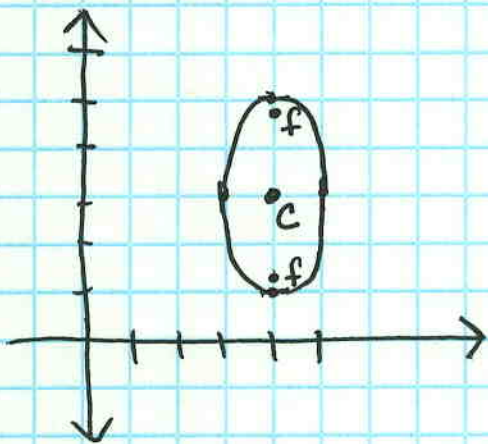
$$\boxed{\frac{(x-8)^2}{4} + \frac{(y-6)^2}{16} = 1}$$

center (8,6)  $a=2$   $b=4$   $c=\sqrt{12}$   
 $\approx 3.5$

$$f_1(8, 9.5) \quad f_2(8, 2.5)$$

$$v_1(8, 10) \quad v_2(8, 2)$$

$$cv_1(6, 6) \quad cw_2(10, 6)$$



$$15. \frac{(x+6)^2}{40} + \frac{(y-2)^2}{12} = 1$$

$$a^2 = 40$$

$$b^2 = 12$$

$$c^2 = 28$$

$$a = \sqrt{40}$$

$$c = \sqrt{28}$$

$$e = \frac{c}{a} = \frac{\sqrt{28}}{\sqrt{40}} = \sqrt{\frac{14}{20}} \approx 0.837$$

$$\boxed{\frac{7}{\sqrt{10}}} \approx 0.837$$

$$16. \frac{(x-8)^2}{14} + \frac{(y+2)^2}{57} = 1$$

$$b^2 = 14$$

$$a^2 = 57$$

$$c^2 = 43$$

$$b = \sqrt{14}$$

$$a = \sqrt{57}$$

$$c = \sqrt{43}$$

$$e = \frac{c}{a} = \frac{\sqrt{43}}{\sqrt{57}} \approx 0.869$$

$$17. \frac{(x+8)^2}{27} + \frac{(y-7)^2}{33} = 1 \quad a^2 = 33 \quad b^2 = 27 \quad c^2 = 6 \quad \sqrt{\frac{c}{a}} = \sqrt{\frac{6}{33}} \approx \boxed{0.42}$$

$$18. \frac{(x-1)^2}{12} + \frac{(y^2+2)^2}{9} = 1 \quad a^2 = 12 \quad c^2 = 3 \quad e = \sqrt{\frac{3}{12}} = \boxed{0.5}$$



44.  $\frac{(x+5)^2}{16} + \frac{y^2}{9} = 1$  center  $(-5, 0)$   $V_1(-1, 0)$   $V_2(-9, 0)$   
 $f_1(-2.35, 0)$   $f_2(-7.65, 0)$   
 $a=4$ ,  $b=\sqrt{7}$   $c=3$   $CV_1(-5, +2.65)$   $CV_2(-5, -2.65)$

45.  $\frac{x^2}{100} + \frac{(y+6)^2}{25} = 1$   $a=10$   $b=5$   $c=\sqrt{75} \approx 8.66$

center  $(0, -6)$   $f_1(8.66, -6)$   $f_2(-8.66, -6)$   
 $V_1(10, -6)$   $V_2(-10, -6)$   
 $CV_1(0, 2.66)$   $CV_2(0, -14.66)$

46.  $9y^2 - 18y + 25x^2 + 100x - 116 = 0$

$9(y^2 - 2y + 1 - 1) + 25(x^2 + 4x + 4 - 4) = 116$

$9(y-1)^2 - 9 + 25(x+2)^2 - 100 = 116$

$\frac{9(y-1)^2}{25} + \frac{25(x+2)^2}{9} = \frac{225}{25} \Rightarrow 1$  center  $(-2, 1)$

$\frac{(y+1)^2}{25} + \frac{(x-2)^2}{9} = 1$

$a=5$   $b=3$   $c=4$

$f_1(2, 5)$   $f_2(2, -3)$

$V_1(2, 6)$   $V_2(2, -4)$

$CV_1(-1, 1)$   $CV_2(5, 1)$