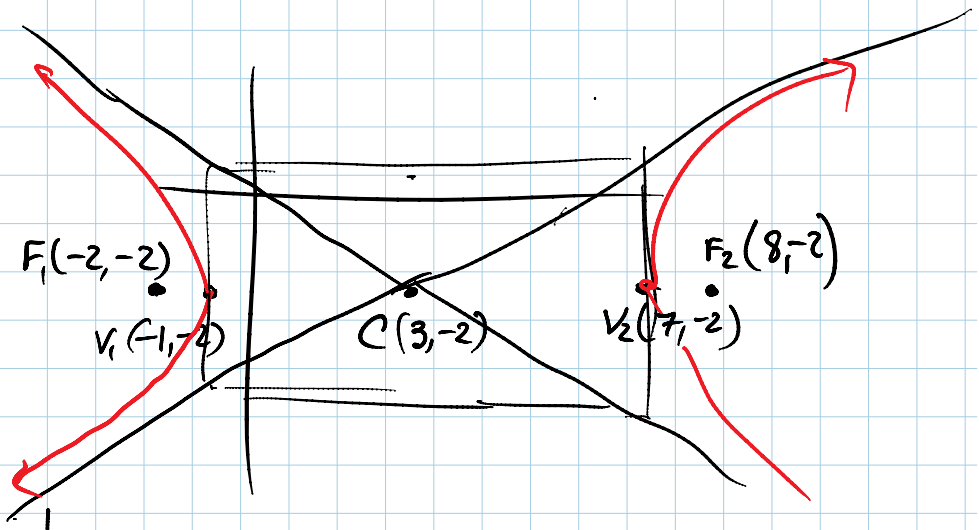
① hyperbola

$$\frac{(x-3)^2}{16} - \frac{(y+2)^2}{9} = 1$$

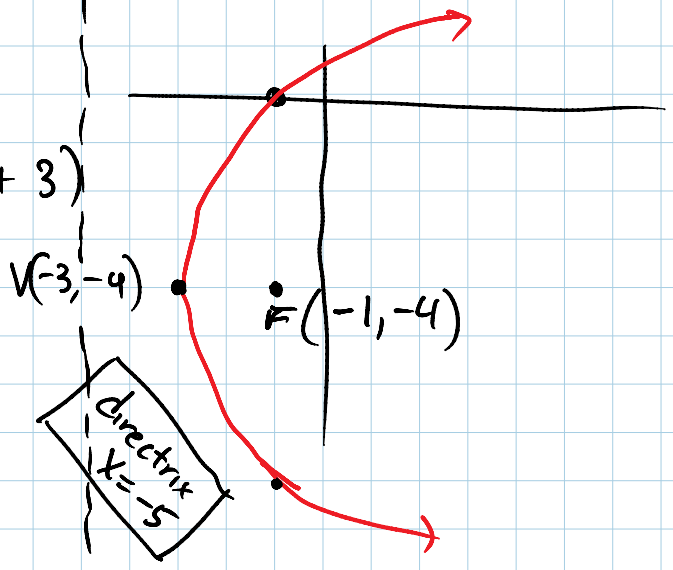


asymptotes

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

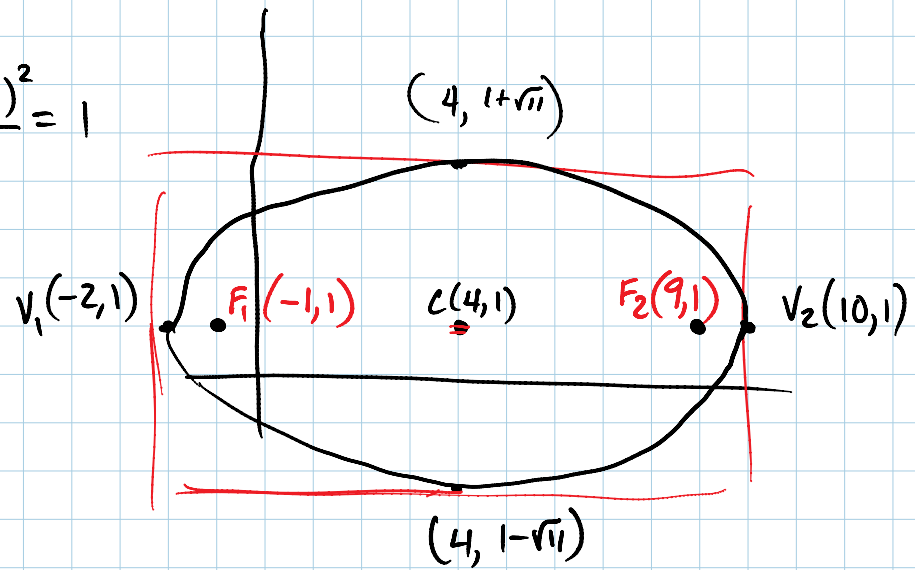
② Parabola

$$(y+4)^2 = 8(x+3)$$



③ ellipse

$$\frac{(x-4)^2}{36} + \frac{(y-1)^2}{11} = 1$$

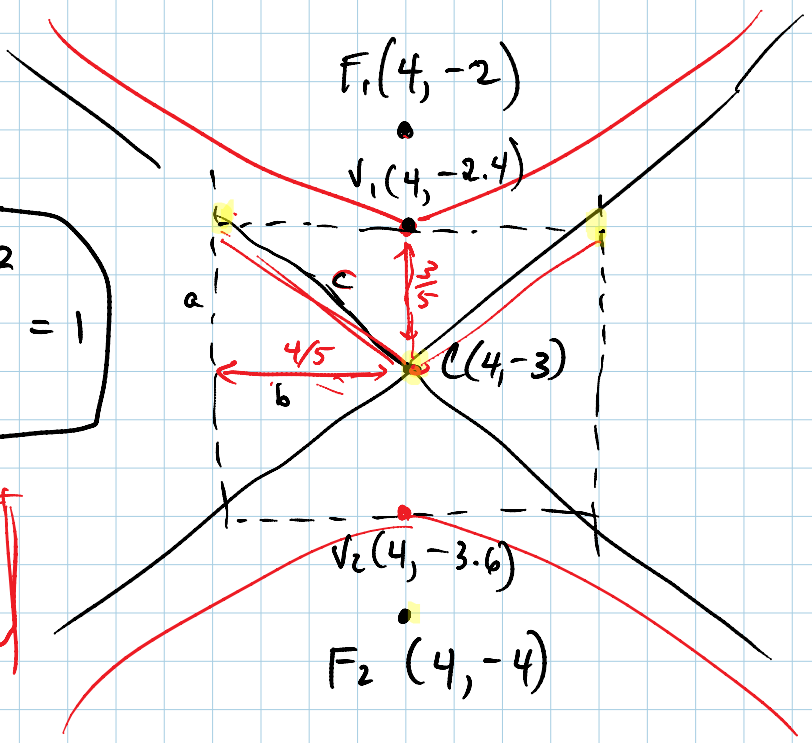


④ hyperbola

$$\frac{(y+3)^2}{\left(\frac{9}{25}\right)} - \frac{(x-4)^2}{\left(\frac{16}{25}\right)} = 1$$

asymptotes

$$y+3 = \pm\frac{3}{4}(x-4)$$



⑤

$$\frac{(x-2)^2}{25} - \frac{(y-3)^2}{11} = 1$$

⑥

$$(x+2)^2 = -12(y-6)$$

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work

① $9x^2 - 16y^2 - 54x - 64y - 127 = 0$

$(9x^2 - 54x\ \ ) + (-16y^2 - 64y\ \ ) = 127$

$9(x^2 - 6x + 9) - 16(y^2 + 4y + 4) = 127 + 81 - 64$

$(-3)^2 = 9$ $\qquad$ $(2)^2 = 4$

$9(x-3)^2 - 16(y+2)^2 = 144$

$$9(x-3) - 16(y+2)^2 = 144$$

$$\frac{9(x-3)^2}{144} - \frac{16(y+2)^2}{144} = \frac{144}{144}$$

$$\boxed{\frac{(x-3)^2}{16} - \frac{(y+2)^2}{9} = 1}$$

② $3y^2 - 24x + 24y - 24 = 0$

$$y^2 - 8x + 8y - 8 = 0$$

$$(y^2 + 8y + 16) = 8x + 8 + 16$$

$+16$: $(4)^2$

$$(y+4)^2 = 8x + 24$$

$$\boxed{(y+4)^2 = 8(x+3)}$$

③ $11x^2 + 36y^2 - 88x - 72y - 184 = 0$

$$(11x^2 - 88x) + (36y^2 - 72y) = 184$$

$$11(x^2 - 8x + 16) + 36(y^2 - 2y + 1) = 184 + 176 + 36$$

$+16$: $(-4)^2$; $+1$: $(-1)^2$

$$11(x-4)^2 + 36(y-1)^2 = 396$$

$$\frac{11(x-4)^2}{396} + \frac{36(y-1)^2}{396} = 1$$

$$\boxed{\frac{(x-4)^2}{86} + \frac{(y-1)^2}{11} = 1}$$

④ $-225x^2 + 400y^2 + 1800x + 2400y - 144 = 0$

$(-225x^2 + 1800x\ \ ) + (400y^2 + 2400y\ ) = 144$

$-225(x^2 - 8x + 16) + 400(y^2 + 6y + 9) = 144$ -3600 $+3600$

($+16$: $\downarrow(-4)^2\uparrow$; $+9$: $\downarrow(3)^2\uparrow$)

$-225(x-4)^2 + 400(y+3)^2 = 144$

$\frac{400}{144}(y+3)^2 - \frac{225}{144}(x-4)^2 = 1$

$\frac{(y+3)^2}{\left(\frac{144}{400}\right)} - \frac{(x-4)^2}{\left(\frac{144}{225}\right)} = 1$

$\frac{(y+3)^2}{\left(\frac{9}{25}\right)} - \frac{(x-4)^2}{\left(\frac{16}{25}\right)} = 1$

⑤ Foci: $(8,3)$, $(-4,3)$ → horizontal / center mdpt $(2,3)$

semi-transverse axis length 6

$$\frac{(x-2)^2}{25} - \frac{(y-3)^2}{11} = 1$$

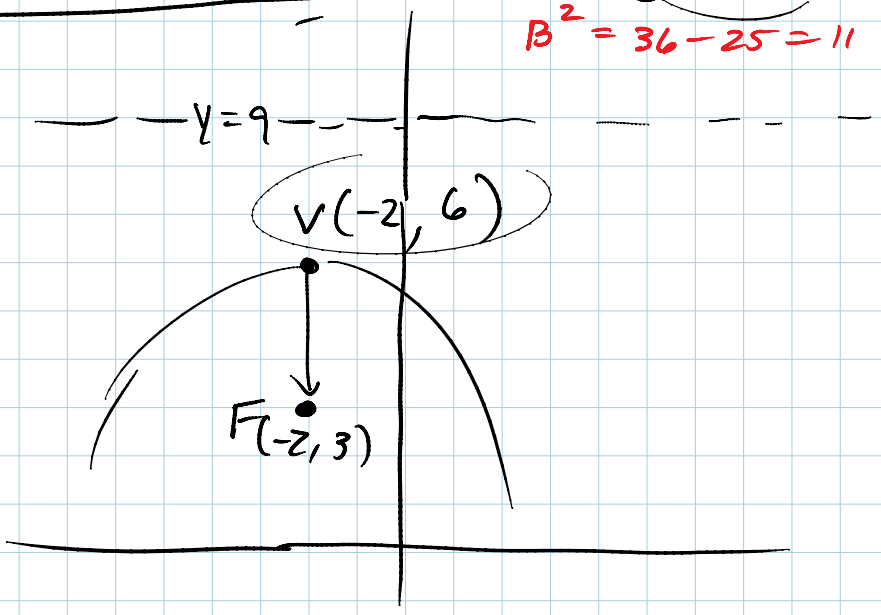
$C = 6$

$C^2 = 36$.

$B^2 = 36 - 25 = 11$

⑥ directrix $y = 9$

focus $(-2,3)$



$$(x+2)^2 = -12(y-6)$$