

3g)

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

$$4a = 6$$

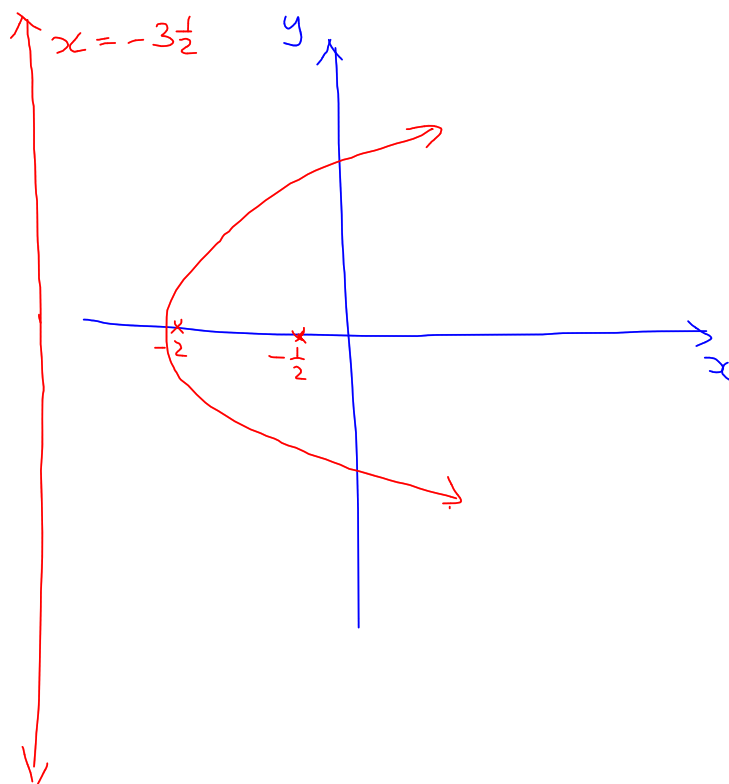
$$a = \frac{3}{2}$$

$$\text{Vertex: } (-2, 0)$$

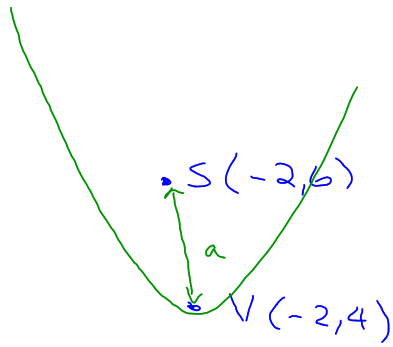
$$\text{focus: } \left(-\frac{1}{2}, 0\right)$$

$$\text{directrix: } x = -3\frac{1}{2}$$

$$\text{axis: } y = 0$$



4a)



$$x^2 = 4ay \quad y^2 = 4ax$$

$$x^2 = -4ay \quad y^2 = -4ax$$

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

$$8 \text{ a) } y^2 - 4x = 0$$

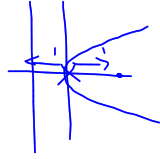
$$y^2 = 4x$$

$$a = 1$$

vertex  $(0, 0)$

focus  $(1, 0)$

directrix  $x = -1$



$$c) 6x = y^2 + 18$$

$$y^2 = 6x - 18$$

$$y^2 = 6(x - 3)$$

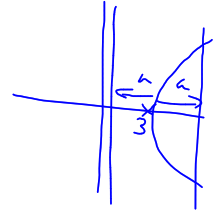
Vertex  $(3, 0)$

$$4a = 6$$

$$a = \frac{3}{2}$$

focus  $(\frac{9}{2}, 0)$

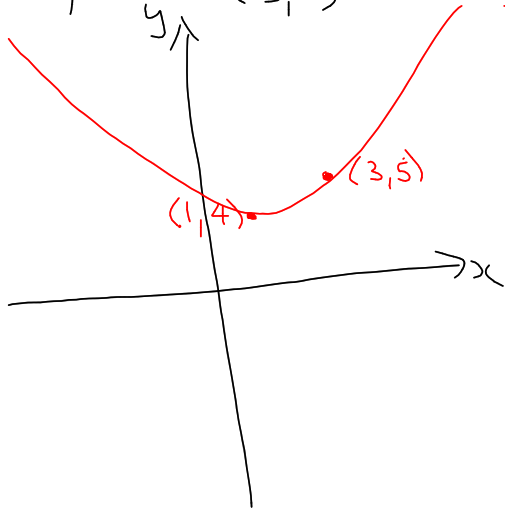
directrix  $x = \frac{3}{2}$



10 a) Vertex:  $(1, 4)$

axis  $\parallel$  y axis

passes  $(3, 5)$



$$(x-1)^2 = 4a(y-4)$$

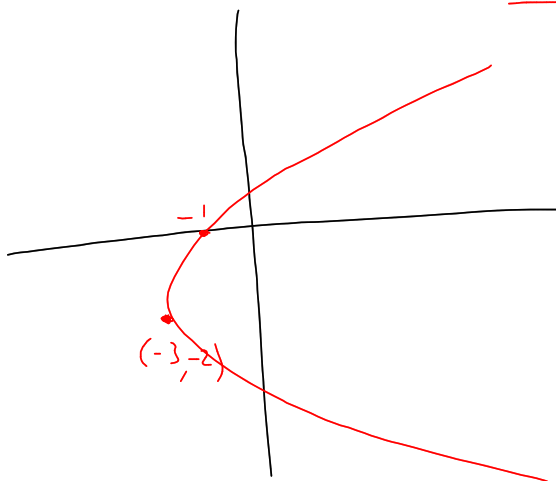
$(3, 5)$ :  $2^2 = 4a(1)$

$$4a = 4$$

$$a = 1$$

$$\therefore \underline{(x-1)^2 = 4(y-4)}$$

10c) Vertex  $(-3, -2)$   
axis  $\parallel$  x-axis  
passes  $(-1, 0)$



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

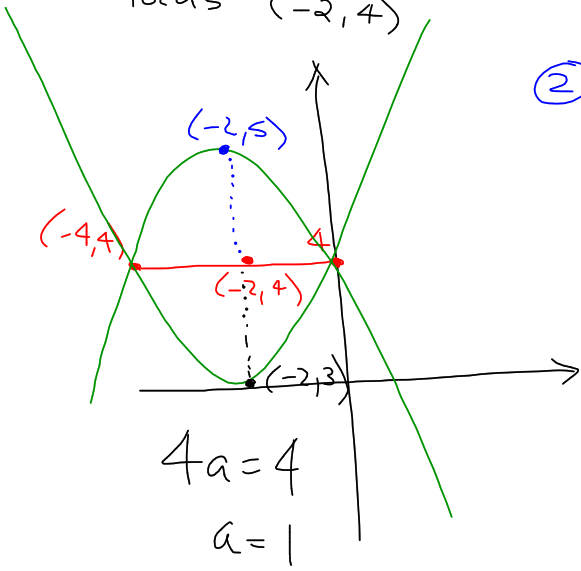
$$\underline{(-1, 0)}: 2^2 = 4a(2)$$

$$4 = 8a$$

$$a = \frac{1}{2}$$

$$\underline{(y+2)^2 = 2(x+3)}$$

11c) latus rectum  $(0,4)$  to ??  
focus  $(-2,4)$



$$4a = 4$$
$$a = 1$$

①  $(x+2)^2 = 4(y-3)$

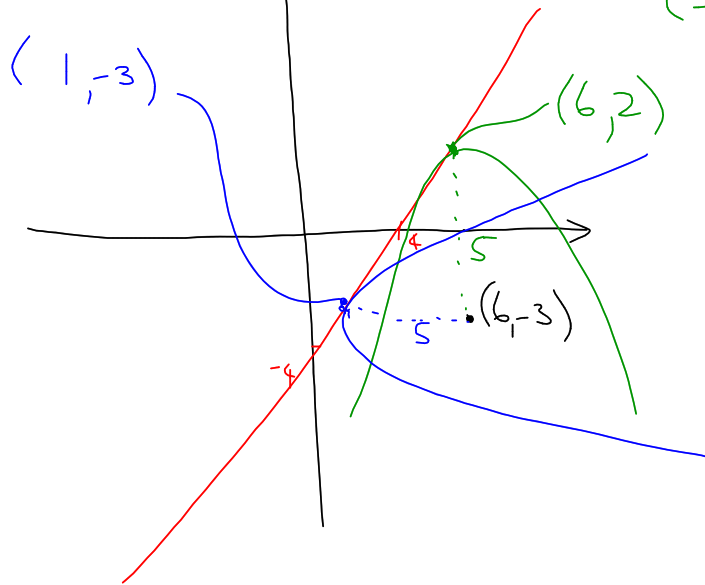
②  $(x+2)^2 = -4(y-5)$

11e) focus  $(6, -3)$

Vertex on  $y = x - 4$

$$\underline{(y+3)^2 = 20(x-1)}$$

$$\underline{(x-6)^2 = -20(y-2)}$$

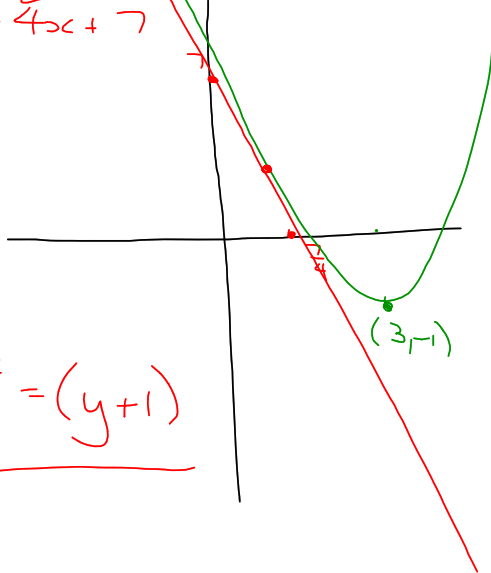


12a) Vertex  $(3, -1)$

axis // y-axis

$4x + y - 7 = 0$  tangent

$y = -4x + 7$



$\therefore$   
 $(x-3)^2 = (y+1)$

$$(x-3)^2 = 4a(y+1)$$

$$(x-3)^2 = k(-4x+8)$$

$$x^2 - 6x + 9 = -4kx + 8k$$

$$x^2 + (4k-6)x + (9-8k) = 0$$

tangent if  $\Delta < 0$

$$(4k-6)^2 - 4(9-8k) = 0$$

$$16k^2 - 48k + 36 - 36 + 32k < 0$$

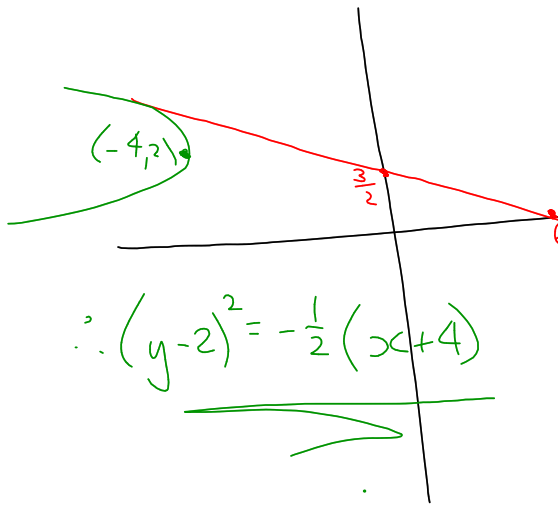
$$16k^2 - 16k = 0$$

$$16k(k-1) = 0$$

$$k = 0 \text{ or } k = 1$$



12b) vertex  $(-4, 2)$   
 axis  $\parallel$  x-axis  
 $x = 6 - 4y$  tangent



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

let  $k = 4a$

$$(y-2)^2 = k(10-4y)$$

$$y^2 - 4y + 4 = 10k - 4ky$$

$$y^2 + (4k-4)y + (4-10k) = 0$$

tangent if  $\Delta = 0$

$$(4k-4)^2 - 4(4-10k) = 0$$

$$16k^2 - 32k + 16 - 16 + 40k = 0$$

$$16k^2 + 8k = 0$$

$$8k(2k+1) = 0$$

$$k = 0 \text{ or } k = -\frac{1}{2}$$