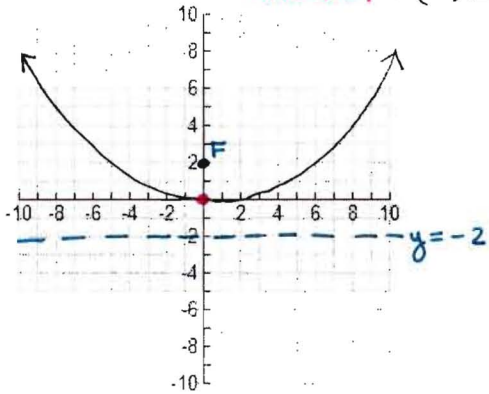


Graph each equation. Label the vertex, focus, and directrix.

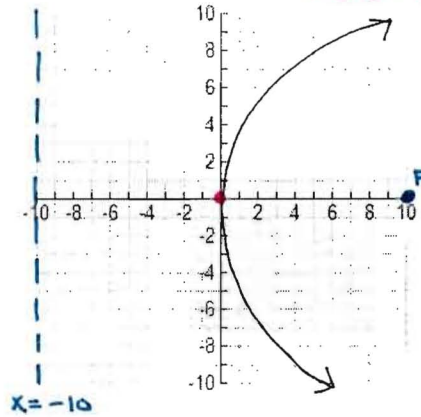
1. $y = \frac{1}{8}x^2$ Horizontal Directrix

$\hookrightarrow 4p = 8 \rightarrow p = 2$ opens up
v(0, 0) F(0, 2)



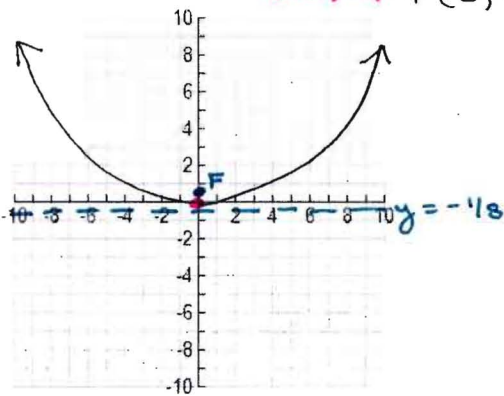
2. $x = \frac{1}{40}y^2$ Vertical Directrix

$\hookrightarrow 4p = 40 \rightarrow p = 10$ opens right
v(0, 0) F(10, 0)



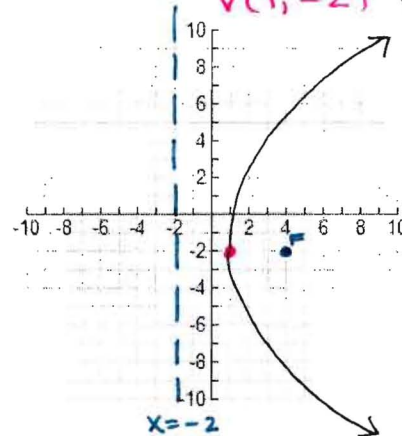
3. $y = 2x^2$ Horizontal Directrix

$\hookrightarrow \frac{1}{4}p = 2 \rightarrow p = \frac{1}{8}$ opens up
v(0, 0) F(0, 1/8)



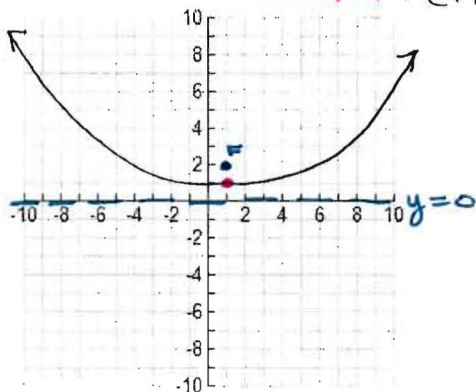
4. $x - 1 = \frac{1}{12}(y + 2)^2$ Vertical Directrix

$\hookrightarrow 4p = 12 \rightarrow p = 3$ opens right
v(1, -2) F(4, -2)



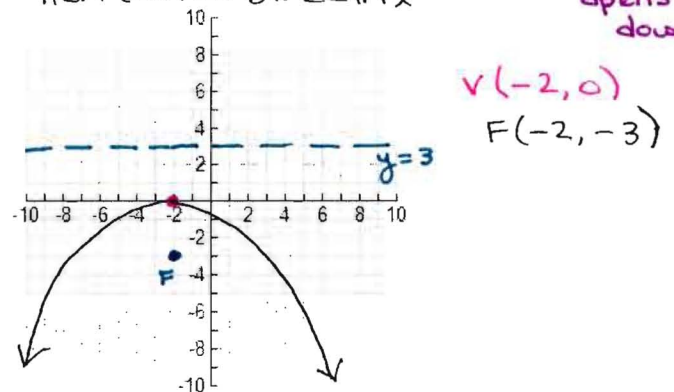
5. $y - 1 = \frac{1}{4}(x - 1)^2$ Horizontal Directrix

$\hookrightarrow 4p = 4 \rightarrow p = 1$ opens up
v(1, 1) F(1, 2)



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

Horizontal Directrix
 $\hookrightarrow 4p = -12 \rightarrow p = -3$ opens down



$$7. x^2 - 8x - y + 20 = 0$$

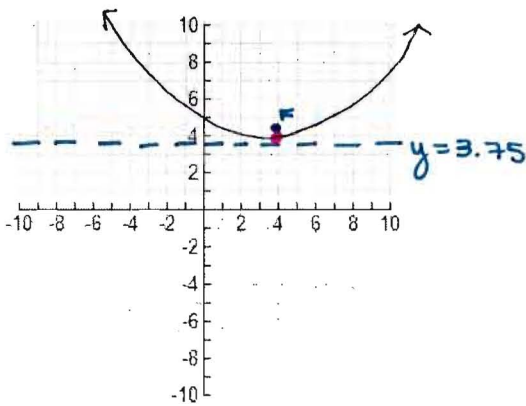
$$x^2 - 8x + \frac{16}{1} = y - 20 + \frac{16}{1}$$

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

$$\rightarrow y-4 = 1(x-4)^2 \text{ Horizontal Directrix}$$

$$\hookrightarrow \frac{1}{4p} = 1 \rightarrow p = \frac{1}{4} \text{ opens up}$$

$$V(4,4) \quad F(4,4.25)$$



$$8. 4x + y^2 - 6y = 9$$

$$y^2 - 6y + \frac{9}{1} = -4x + 9 + \frac{9}{1}$$

$$(y-3)^2 = -4x + 18$$

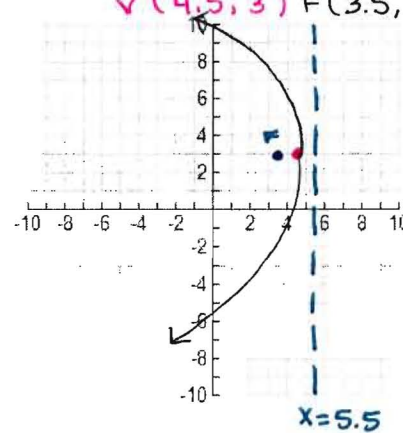
$$(y-3)^2 = -4(x-4.5)$$

$$-\frac{1}{4}(y-3)^2 = (x-4.5)$$

$$\rightarrow x-4.5 = -\frac{1}{4}(y-3)^2 \text{ Vertical Directrix}$$

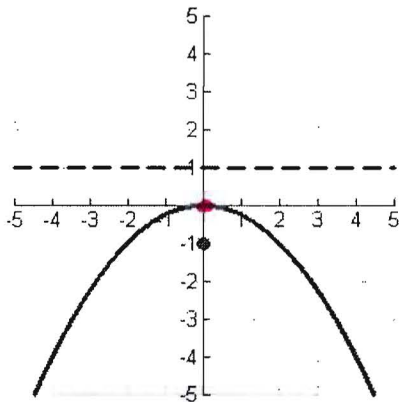
$$\hookrightarrow 4p = -4 \rightarrow p = -1 \text{ opens left}$$

$$V(4.5,3) \quad F(3.5,3)$$



Write the standard equation for each parabola graphed below:

9.



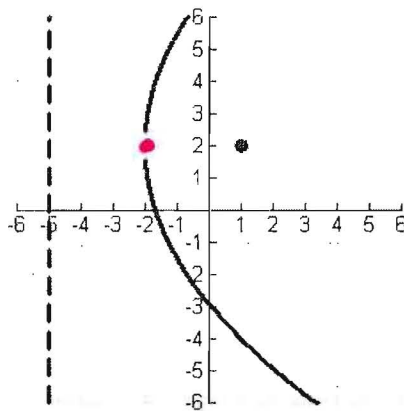
$$V(0,0) \quad p = -1$$

Horizontal Directrix

$$y = \frac{1}{4p}x^2$$

$$y = -\frac{1}{4}x^2$$

10.



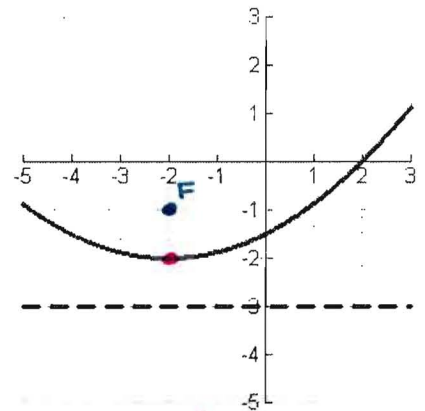
$$V(-2,2) \quad p = 3$$

Vertical Directrix

$$x-h = \frac{1}{4p}(y-k)^2$$

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

11.



$$V(-2,-2) \quad p = 1$$

Horizontal Directrix

$$y-k = \frac{1}{4p}(x-h)^2$$

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