Geometry CC
17.3 Parabola WS

Name: KEY
Date: _____ Period: ___

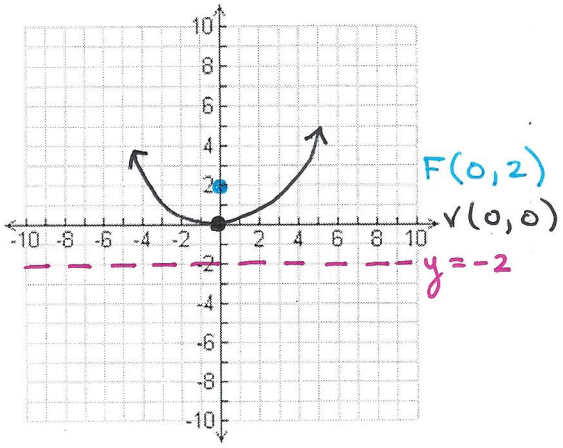
Graph each equation. Label the vertex, focus, and directrix.

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

$p = 2$ (down)

$V(0,0)$

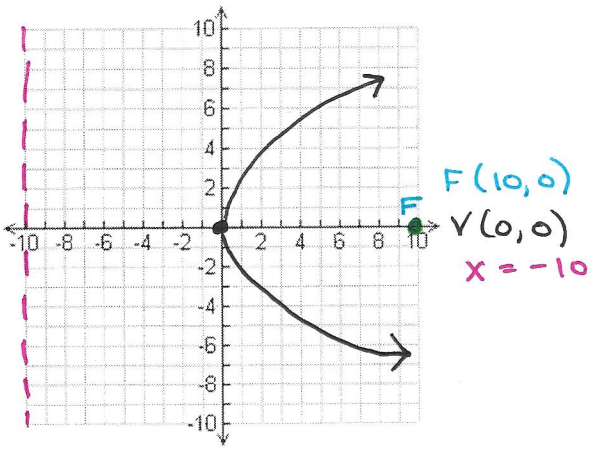
$y =$ ↑ or ↓



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

$V(0,0)$ → $p = 10$ (right)

$x =$ ← or →

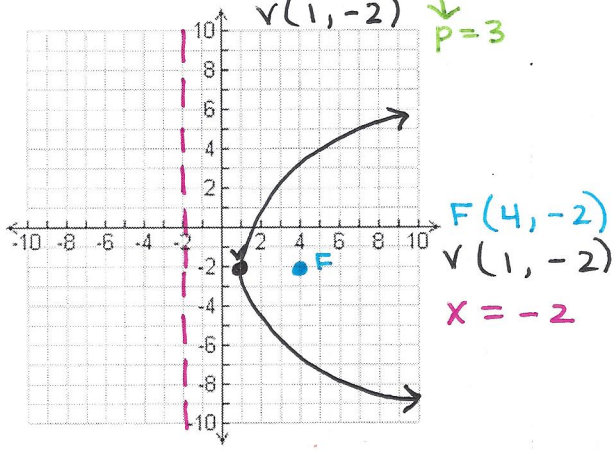


3. $x - 1 = \frac{1}{12}(y+2)^2$ Vertical Directrix

$h = 1$, $k = -2$

$V(1,-2)$ → $p = 3$ (right)

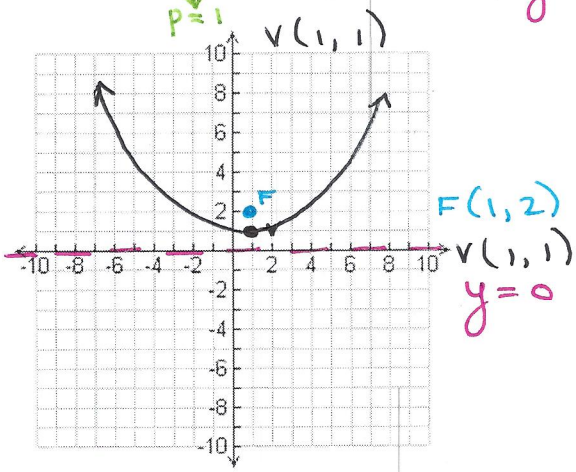
$x =$ ← or →



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

$h = 1$, $k = 1$

$V(1,1)$ → $p = 1$ (down)

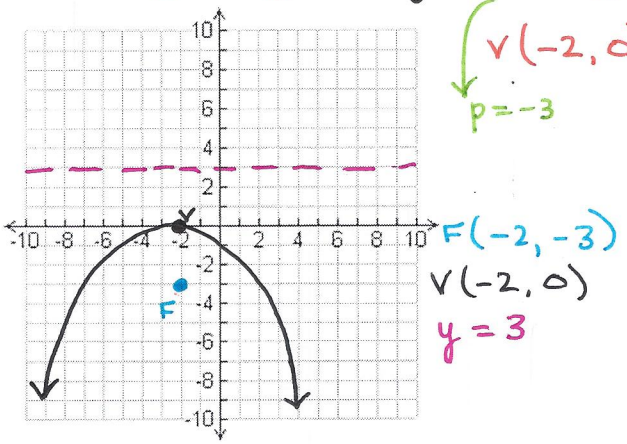


5. $-12y = (x+2)^2$ → $y = \frac{1}{-12}(x+2)^2$ Horizontal Directrix

$h = -2$

$V(-2,0)$ → $p = -3$ (down)

$y =$ ↑ or ↓



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

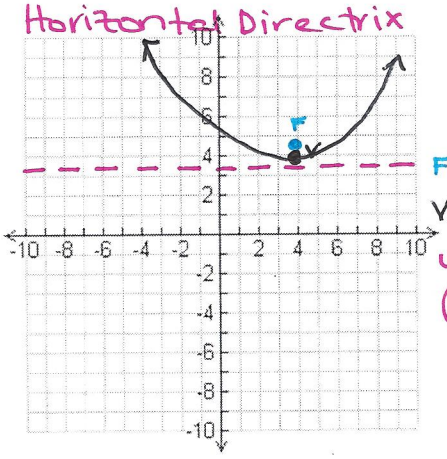
$x^2 - 8x + 16 = y - 20 + 16$

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

$y - 4 = 1(x-4)^2$ (k, h) $V(4,4)$

$1 = \frac{1}{4p} \rightarrow p = 1/4$ sorry!

Horizontal Directrix



$F(4, 4.25)$

$V(4,4)$

$y = 3.75$

7. $4x + y^2 - 6y = 9$

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

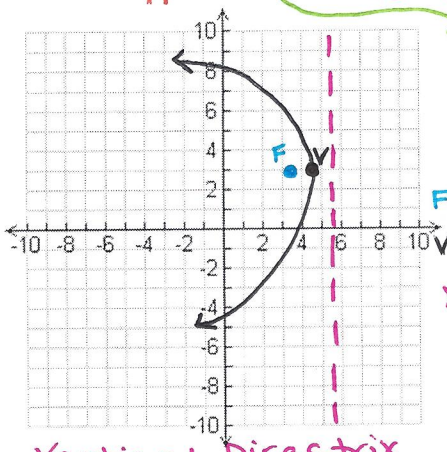
$(y-3)^2 = -4x + 18$

$\frac{(y-3)^2}{-4} = \frac{-4x+18}{-4}$

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

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

$p = -1$



$F(3.5, 3)$

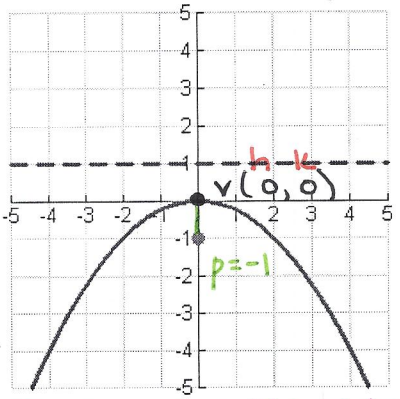
$V(4.5, 3)$

$x = 5.5$

Vertical Directrix

Write the standard equation for each parabola graphed below:

8.



$h\ k$

$V(0,0)$

$p = -1$

Horizontal Directrix

$y = 1$

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

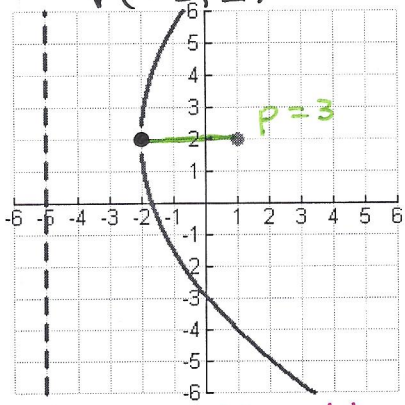
$y - 0 = \frac{1}{-4}(x-0)^2$

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

9.

$h\ k$

$V(-2, 2)$



$p = 3$

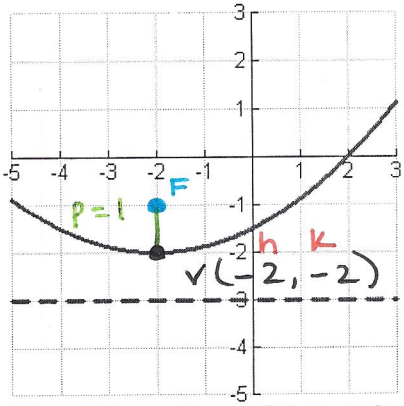
Vertical Directrix

$x = -5$

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

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

10.



$p = 1$

F

$h\ k$

$V(-2, -2)$

Horizontal Directrix

$y = -3$

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

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