Pre-AP Precal

Parabolas and Hyperbolas

Date _____

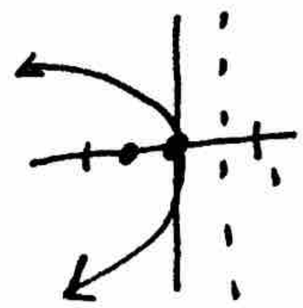
Name Key

Graph.

P 1. $x = -\frac{y^2}{2}$ · horiz. · left

$-2x = y^2$

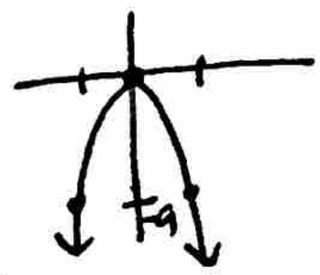
vertex $(0,0)$ $-2 = 4p$ $p = -1/2$



P 2. $y = -9x^2$ · vert. · down

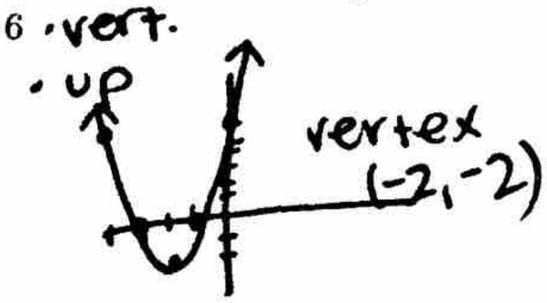
x	y
-1	-9
0	0
1	-9

vertex $(0,0)$



P 3. $y = 2x^2 + 8x + 6$ · vert. · up

x	y
-4	6
-3	0
-2	-2
-1	0
0	6



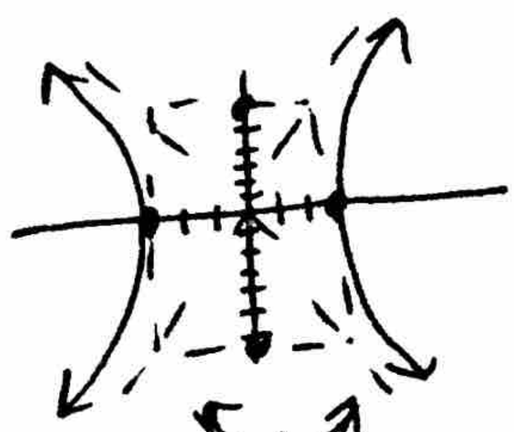
vertex $(-2,-2)$

H 4. $\frac{x^2}{9} - \frac{y^2}{36} = 1$

center $(0,0)$

horiz.

vertices $(3,0)$ $(-3,0)$

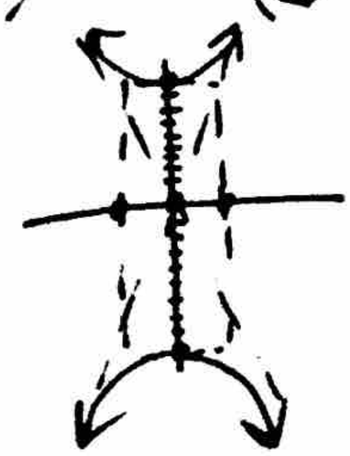


H 5. $\frac{y^2}{81} - \frac{x^2}{1} = 1$

center $(0,0)$

vert.

vertices $(0,9)$ $(0,-9)$

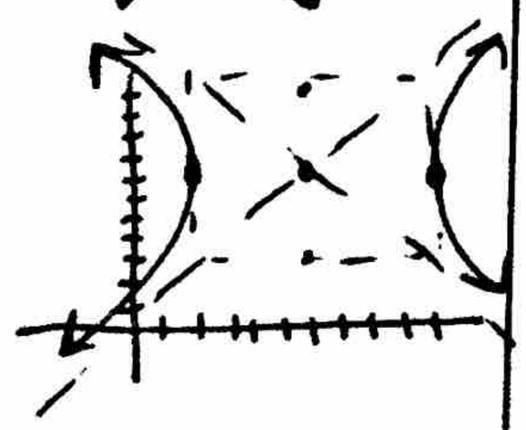


H 6. $\frac{(x-6)^2}{16} - \frac{(y+7)^2}{16} = 1$

center $(6,7)$

horiz.

vertices $(2,7)$ $(10,7)$



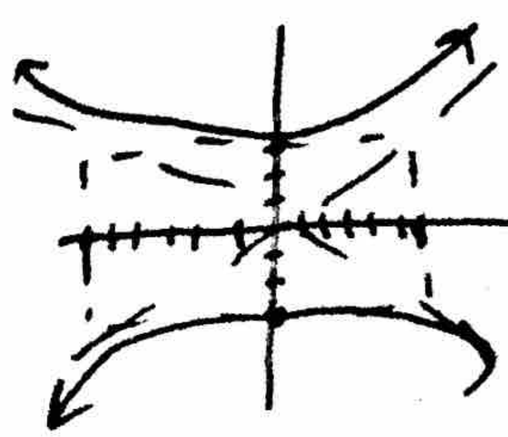
H 7. $\frac{36y^2}{324} - \frac{9x^2}{324} = \frac{324}{324}$

$\frac{y^2}{9} - \frac{x^2}{36} = 1$

center $(0,0)$

vert.

vertices $(0,3)$ $(0,-3)$



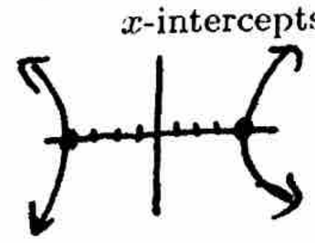
8. Find the equation of the parabola that opens down, has a vertex of $(7,-9)$, and is congruent to the parabola $y = 9x^2$. same p-value

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

9. Find the equation of the parabola that opens to the right, has a vertex of $(2,5)$, and is congruent to the parabola $x = 9y^2$.

$x - 2 = 9(y-5)^2$

10. Find the equation of the hyperbola having x-intercepts ± 4 and asymptotes $y = \pm 2x$.



slope $\frac{2}{1} = \frac{8}{4}$ $\frac{x^2}{16} - \frac{y^2}{64} = 1$

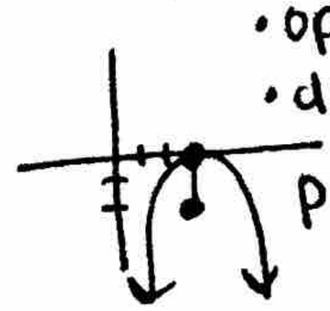
horiz.

Write the equation of the graph.

11. A parabola with a vertex at (3,0) and the focus at (3,-2)

· opens around focus

· down

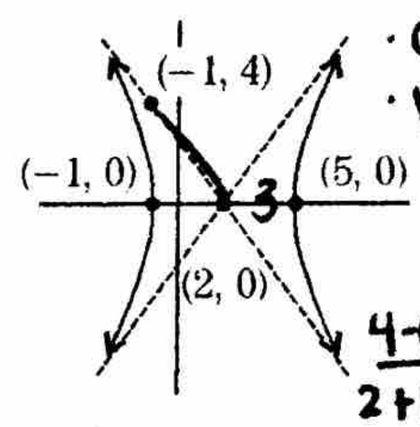


$p = -2$

$(x-3)^2 = 4(-2)(y-0)$

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

12.



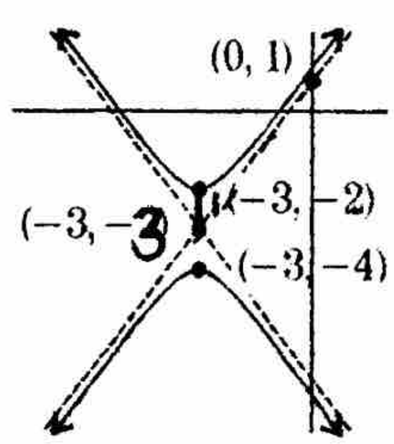
· center $(2,0)$

· horiz.

$\frac{4-0}{2+1} = \frac{4}{3}\left(\frac{b}{a}\right)$

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

13.



· center $(-3,-3)$

· vert.

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

$\frac{1--3}{0--3} = \frac{4}{3}\left(\frac{a}{b}\right)$ If $a = 1$ $b = 3/4$