Chapter 9 Review Name: Key Hour: _____

1. Graph each of the following conic section: $\frac{25(x+2)^2}{225}+\frac{9(y-1)^2}{225}=\frac{225}{225}$

Identify all key characteristics such as center, vertex, focus(foci), directrix, major axis, minor axis, and equations of asymptotes

V. Ellipse

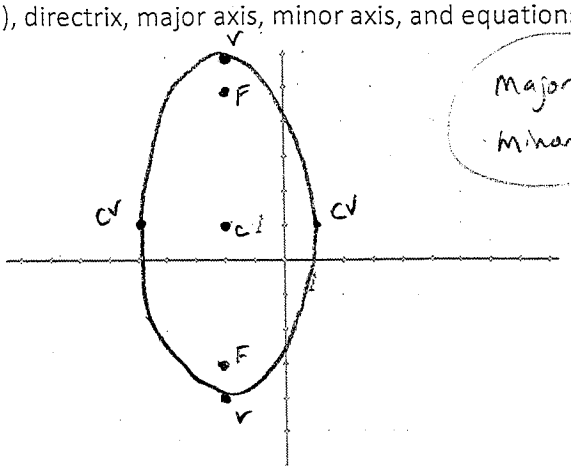
$c^2=a^2-b^2$

$\frac{(x+2)^2}{9}+\frac{(y-1)^2}{25}=1$

$a=5$
$b=3$
$c=4$

$c^2=5^2-3^2$
$25-9$
$c^2=16$ $c=4$

Center: $(-2,1)$
Vertices: $(-2,6)$
$(-2,-4)$
Co vertices: $(1,1)$
$(-5,1)$
Foci: $(-2,5)$
$(-2,-3)$



Major Axis: 10
Minor Axis: 6

2. Graph each of the following conic sections: $\frac{(y-2)^2}{9}-\frac{(x+1)^2}{16}=1$ V. Hyp.

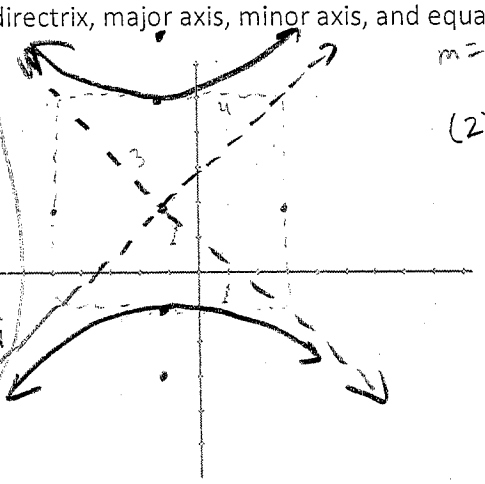
Identify all key characteristics such as center, vertex, focus(foci), directrix, major axis, minor axis, and equations of asymptotes where applicable.

$a=3$
$b=4$
$c=5$

$c^2=3^2+4^2$
$c^2=9+16$
$c^2=25$
$c=5$

$m=-\frac{3}{4}$
$2=-\frac{3}{4}(-1)+b$
$2=\frac{3}{4}+b$
$-3/4$ $-3/4$
$b=5/4$

Center: $(-1,2)$
vertices: $(-1,5)$
$(-1,-1)$
Foci: $(-1,7)$
$(-1,-3)$
Asym: $y=\frac{3}{4}x+\frac{11}{4}$
$y=-\frac{3}{4}x+\frac{5}{4}$



$m=\frac{3}{4}$
$(2)=\frac{3}{4}(-1)+b$
$2=-\frac{3}{4}+b$
$+\frac{3}{4}$ $+\frac{3}{4}$
$\frac{8}{4}+\frac{3}{4}=b$
$b=\frac{11}{4}$

3. Graph each of the following conic sections: $(y+3)^2=12(x+1)$ H. Parabola

Identify all key characteristics such as center, vertex, focus(foci), directrix, major axis, minor axis, and equations of asymptotes where applicable.

$(y+3)^2=12(x+1)$
$4p$

vertex $(-1,-3)$

$p=3$

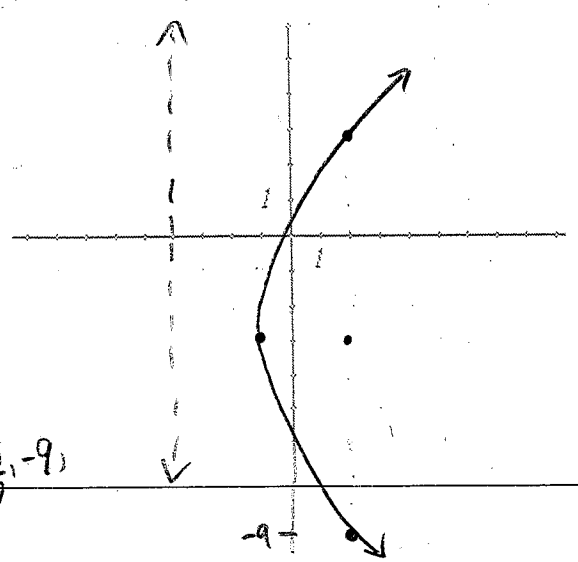
$4p=12$
$p=3$

Focus: $(2,-3)$

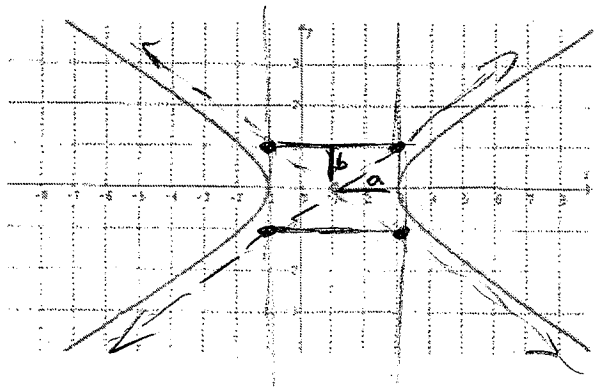
Directrix: $x=-4$

Plug 2 in for x solve for y

$(y+3)^2=12(2+1)$
$(y+3)^2=12(3)$
$\sqrt{(y+3)^2}=\sqrt{36}$
$y+3=\pm 6$
$y=9$ $y=-3$
$(2,3)$ $(2,-9)$



4. Write the equation of the graph below.



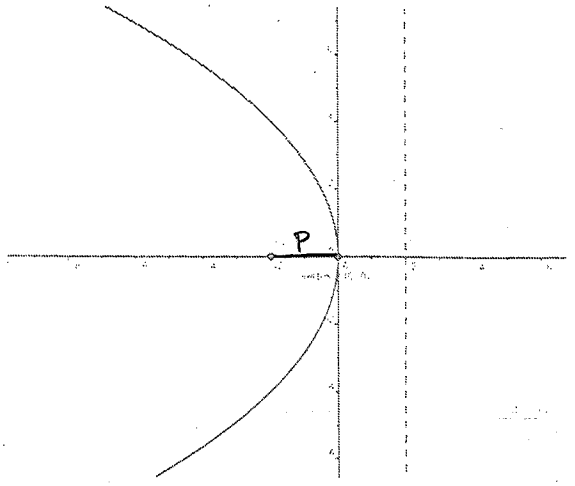
$a = 2 \quad b = 1$

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

5. Write the equation of the graph below.

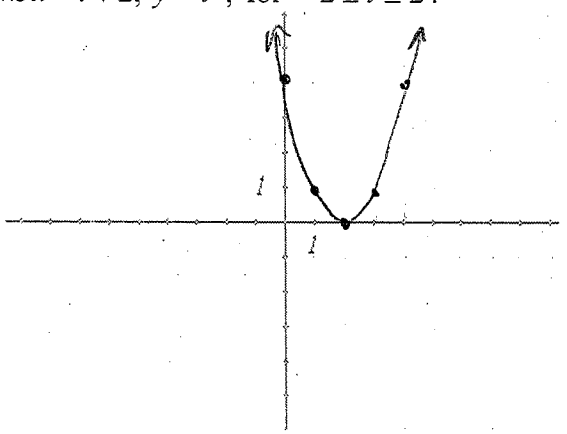
$p = -2$

$y^2 = -8x$



6. Graph the plane curve described by the parametric equations $x = t + 2$, $y = t^2$, for $-2 \le t \le 2$.

t	$x = t+2$	$y = t^2$	(x, y)
-2	0	4	(0,4)
-1	1	1	(1,1)
0	2	0	(2,0)
1	3	1	(3,1)
2	4	4	(4,4)



7. Convert the equation to standard form by completing the square on x and y.

$4x^2 - y^2 + 32x + 6y + 39 = 0$

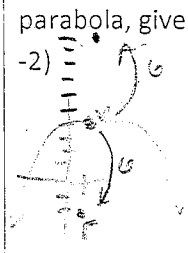
$4x^2 + 32x - y^2 + 6y = -39$

$4(x^2 + 8x + 16) - (y^2 - 6y + 9) = -39 + 64 - 9$

$$\frac{4(x+4)^2}{16} - \frac{(y-3)^2}{16} = \frac{16}{16}$$

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

8. Find the standard form of the equation of the parabola, given that the vertex is (1, 4) and the focus is (1, -2)



$x^2 = 4 - 6y$

$(x-1)^2 = -24(y-4)$

9. Given the following parametric equation and a value for the parameter t, $x = t^2 + 1$, $y = 4 - t^3$, $t = 2$ find the coordinates of the point on the plane described by the equation corresponding to the t-value.

$(5, -4)$