Chapter 9 Review Name: Key Hour: _____

1. Graph each of the following conic section: $25(x+2)^2+9(y-1)^2=225$ Ellipse (vertical)

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

$\frac{25(x+2)^2}{225}+\frac{9(y-1)^2}{225}=\frac{225}{225}$

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

3^2 b 5^2 a

$c^2=5^2-3^2$

$25-9$

$c^2=16$

$c=4$

Center: $(-2,1)$

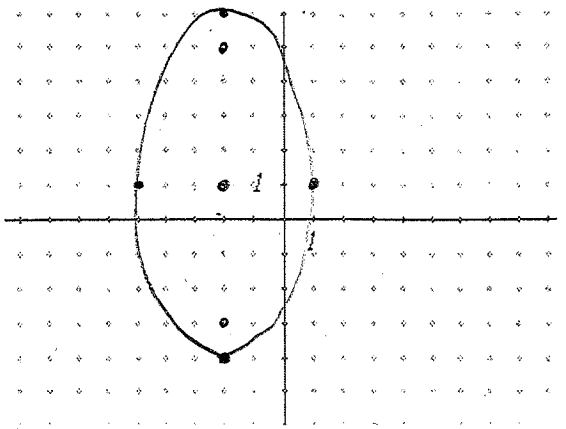
Vertices: ± 5 in y $(-2,6)$ $(-2,-4)$

Covertices: ± 3 in x $(1,1)$ $(-5,1)$

Focus: $(-2,5)$ ± 4 in y $(-2,-3)$

Major Axis: 10

Minor Axis: 6



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

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

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

$a=3$ $b=4$

Center: $(-1,2)$

vertices: $(-1,5)$ ± 3 in y $(-1,-1)$

Foci: $(-1,7)$ ± 5 in y $(-1,-3)$

$c^2=3^2+4^2$

$c^2=9+16$

$c^2=25$

$c=5$

$m=3/4$

$(-1,2)$

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

$y-2=3/4x+3/4$

$+2$ $+2$

$y=3/4x+1\frac{1}{4}$

$m=-3/4$

$(-1,2)$

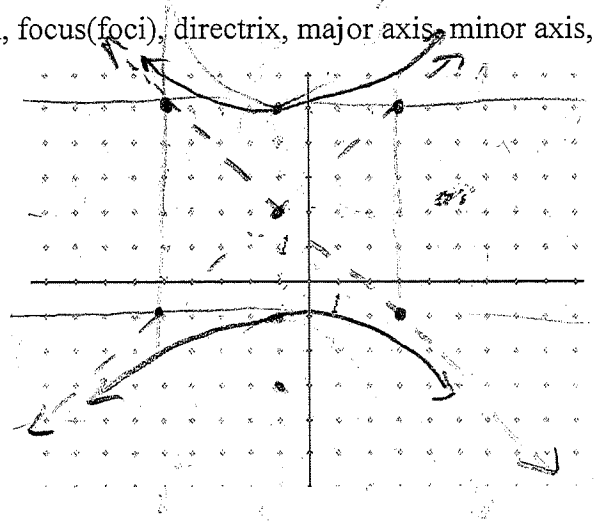
$y-2=-3/4(x+1)$

$y-2=-3/4x-3/4$

$+2$ $+2$

$y=-3/4x+5/4$

Asym:



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

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

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

vertex: $(-1,-3)$

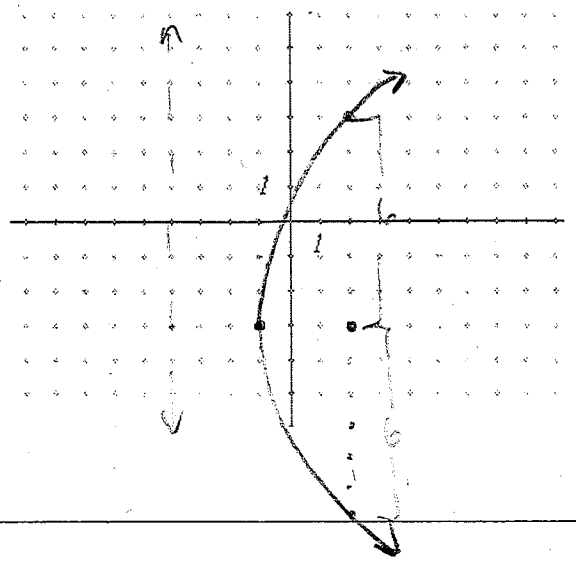
Focus: $4p=12$

$p=3$

$(2,-3)$

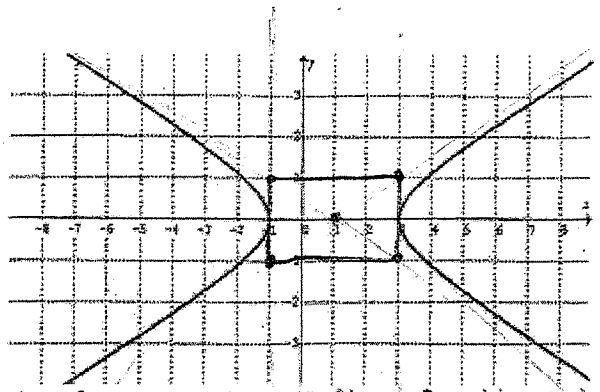
Directrix: $x=-4$

L.R.: $|12|=12$ $\frac{12}{2}=6$



horiz hyperbola

4. Write the equation of the graph below.



center: (1,0) vertex: (3,0) ← 2 units right of center

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

Horiz. Parabola

Directrix $x=2$

5. Write the equation of the graph below.

left 2

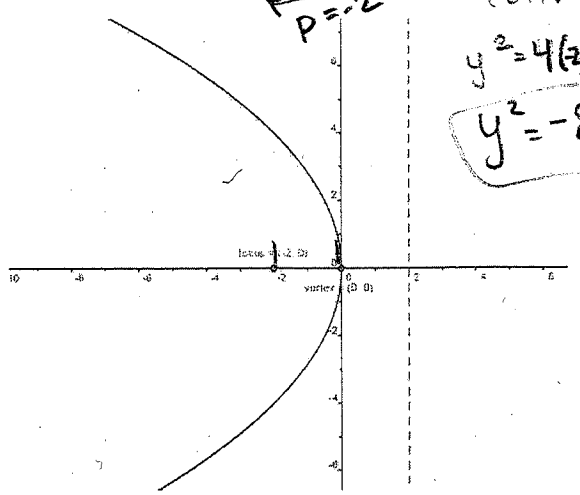
$p=-2$

$y^2 = 4px$

center: (0,0)

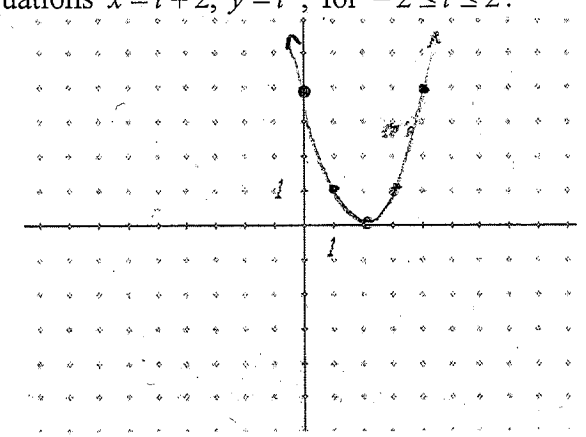
$y^2 = 4(-2)x$

$y^2 = -8x$



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

t	$x=t+2$	$y=t^2$	
-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. Identify the conic section that the polar equation represents: $r = \frac{9}{9-3\sin\theta}$ $\frac{1}{1-\frac{1}{3}\sin\theta}$

$e = \frac{1}{3}$

a) parabola b) ellipse

c) hyperbola d) none of these

$e=1$ parabola $e<1$ ellipse

8. Identify the conic section that the polar equation represents: $r = \frac{12}{3-6\cos\theta}$ $\frac{4}{1-2\cos\theta}$

$e = 2$

a) parabola b) ellipse

c) hyperbola d) none of these

$e>1$ hyperbola

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

down 6

$p = -6$

vertical parabola

directrix $y=$

$(x-1)^2 = 4(-6)(y-4)$

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

10. 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.

$x = 2^2+1 = 5$

$y = 4-2^3 = 4-8 = -4$

(5, -4)