Honors Pre-Calculus
Chapter 8 Test Review

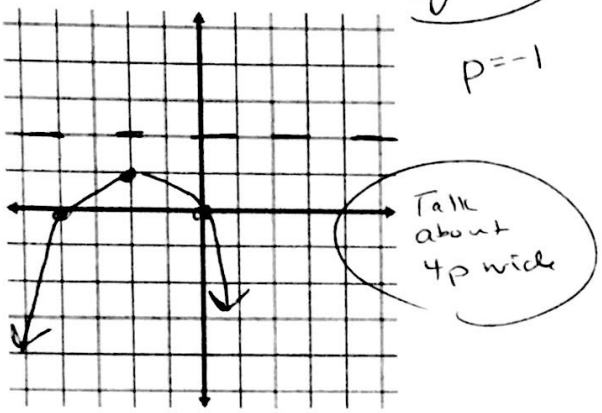
Name_____
Date_____ **Period**____

This is just an idea of certain concepts to practice. You should also look over your notes, extra practice worksheets, and applications practice from this section to prepare for this test.

Find the vertex, focus, directrix and sketch the graph.

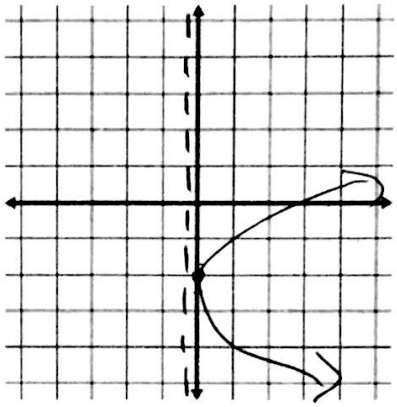
1.) $(x+2)^2 = -4(y-1)$

V (-2, 1)
y = 2
p = -1



2.) $(y+2)^2 = x$

V (0, -2)
x = -1/4
p = -1/4



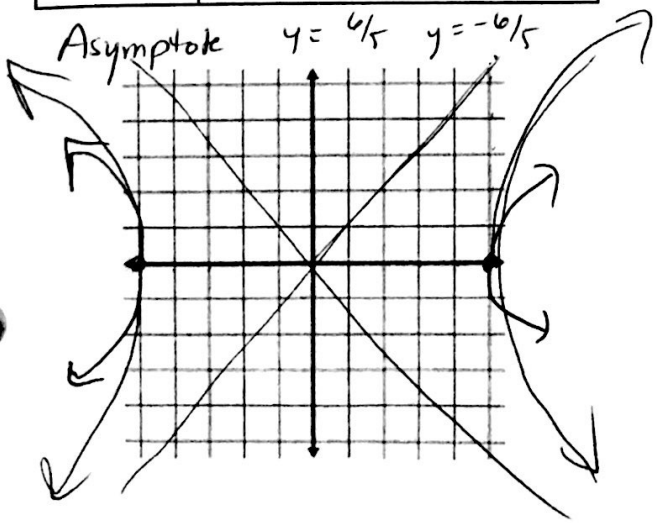
Identify the type of conic. Find the center, vertices, and foci of the conic, and sketch its graph.

3.) $\frac{x^2}{25} - \frac{y^2}{36} = 1$

$c^2 = a^2 + b^2$
$c = \sqrt{61}$

Type:	Hyperbola
Center:	(0, 0)
Vertices:	$(\pm 5, 0)$
Foci:	$(\pm\sqrt{61}, 0)$

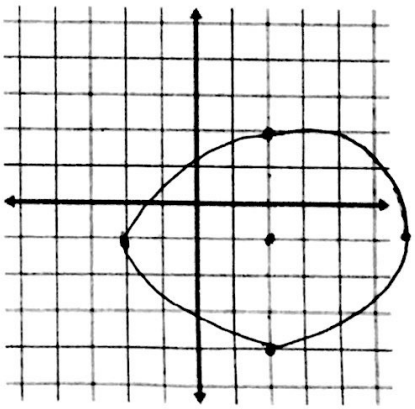
Asymptote $y = 6/5$ $y = -6/5$



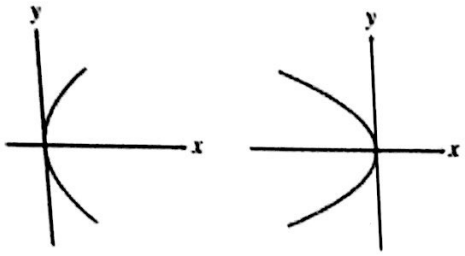
4.) $\frac{(x-2)^2}{16} + \frac{(y+1)^2}{9} = 1$

$a^2 = b^2 + c^2$
$16 = 9 + c^2$
$c = \sqrt{7}$

Type:	Ellipse
Center:	(2, -1)
Vertices:	(-2, -1) (6, -1) (2, 2) (2, -4)
Foci:	$(2 \pm \sqrt{7}, -1)$

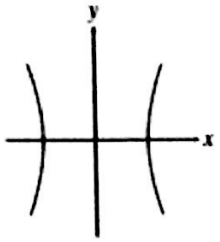


ch the equation with its graph.

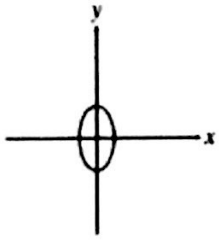


(a)

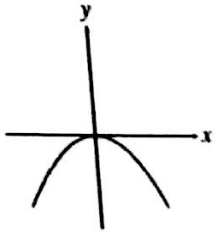
(b)



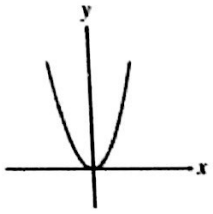
(c)



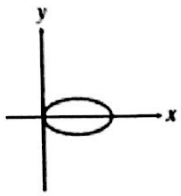
(f)



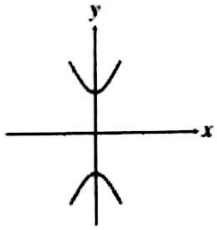
(c)



(d)



(g)



(h)

5.) $y^2 = -3x$ B

6.) $\frac{(x-2)^2}{4} + y^2 = 1$ G

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

8.) $\frac{x^2}{9} - \frac{y^2}{25} = 1$ E

9.) $\frac{y^2}{3} + x^2 = 1$ F

10.) $x^2 = y$ D

11.) $x^2 = -4y$ C

12.) $y^2 = 6x$ A

Identify the conic. Write the conic in standard form.

13.) $x^2 - 6x - y - 3 = 0$

$x^2 - 6x + 9 = y + 3 + 9$

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

Parabola

14.) $x^2 + 4x + 3y^2 - 5 = 0$

$(x^2 + 4x + 4) + 3y^2 = 5 + 4$

$\frac{(x+2)^2}{9} + \frac{3y^2}{9} = \frac{9}{9}$

$\frac{(x+2)^2}{9} + \frac{y^2}{3} = 1$

ellipse

16.) $x^2 - y^2 - 2x + 4y - 6 = 0$

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

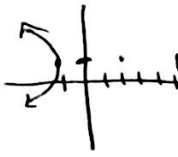
$(x-1)^2 - (y-2)^2 = 3$

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

Hyperbola

17.) Hyperbola Center: (2, 1), vertices: (2±3, 1)

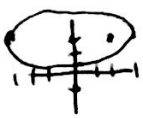
One Asymptote is: $y = \frac{4}{3}(x-2)+1$



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

18.) Ellipse Center: (0, 2)
Semi-major axis: 3
One focus: (2, 2)

$a = 3$
$c = 2$
$b = \sqrt{5}$



$\frac{x^2}{9} + \frac{(y-2)^2}{5} = 1$

19.) Parabola: Vertex(1, -2), opens left, focal length = 2

$p = 2$

$(y+2)^2 = -8(x-1)$

ve for y to obtain the equation(s) that could be entered into a graphing calculator to graph the nic.

20.) $-3x^2+7xy-2y^2-x+20y-15=0$

$-2y^2+(7xy+20y)+(-3x^2-x-15)=0$

$(7x+20)(7x+20)$

$49x^2+140x+140x+400$

$49x^2+280x+400$

$-24x^2-8x-120$

$$y=\frac{-(7x+20)\pm\sqrt{(7x+20)^2-4(-2)(-3x^2-x-15)}}{2(-2)}$$

$$y=\frac{-7x-20\pm\sqrt{25x^2+272x+280}}{-4}$$

Identify the type of conic, and rotate the coordinate axes to eliminate the xy-term.

21.) $x^2+2xy+y^2=0$

$\cot 2\theta=\frac{1-1}{2}=0$ $\quad\theta=\pi/4$

$x=\frac{\sqrt{2}}{2}(x'-y')$

$y=\frac{\sqrt{2}}{2}(x'+y')$

$\frac{1}{2}(x^2-2xy+y^2)+2\left(\frac{1}{2}\right)(x^2-y^2)+\frac{1}{2}(x^2+2xy+y^2)=0$

$x^2-2xy+y^2+2x^2-2y^2+x^2+2xy+y^2=0$

$4x^2$

Red

Determine the eccentricity, type of conic, and directrix.

22.) $r=\frac{42}{2-7\sin\theta}$

$\frac{2}{2}\frac{7}{2}=21\frac{2}{2}$

$r=\frac{21}{1-7/2\sin\theta}$

$e=7/2$ Hyperbola

$y=-6$

23.) $r=\frac{2}{4-\cos\theta}$

$r=\frac{\frac{1}{2}}{1-\frac{1}{4}\cos\theta}$

$\frac{1}{4}x=\frac{1}{2}$

$e=1/4$ ellipse

$x=-2$

ntify and graph the conic. Find the values of a, b, c and e.

) $r = \dfrac{16}{5+3\cos\theta}$

$r = \dfrac{\frac{16}{5}}{1+\frac{3}{5}\cos\theta}$

$e = 3/5$ ellipse

$e = \frac{c}{a}$

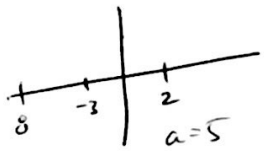
$a = 5$

$c = 3$

$\frac{(x+3)^2}{25} + \frac{y^2}{16} = 1$

$b = 4$

r	θ
2	0
8	π



Use the points P(-1, 0, 3) and Q(3, -2, -4) and the vectors $v = \langle -3, 1, -2 \rangle$ and $w = \langle 3, -4, 0 \rangle$.

25.) Compute the distance from P to Q. $\sqrt{4^2+2^2+7^2} = \sqrt{69}$

26.) Find the midpoint of $\overline{PQ}$. $(1, -1, -1/2)$

27.) Compute v + w. $\langle 0, -3, -2 \rangle$

28.) Compute v – w. $\langle -6, 3, -2 \rangle$

29.) Compute the magnitude of v. $\sqrt{14}$

30.) Write an equation for the sphere centered at P with radius of 4. $(x+1)^2 + (y)^2 + (z-3)^2 = 16$

31.) Write a vector equation for the line through P in the direction of v.

$r = \langle -1, 0, 3 \rangle + \langle -3, 1, -2 \rangle t$