

Name _____

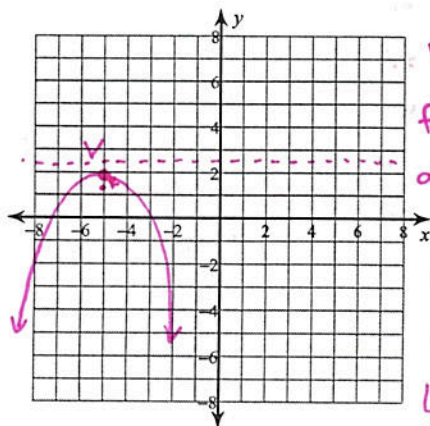
Name _____

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Conics Rally Coach

Identify the vertex, focus, axis of symmetry, directrix, direction of opening, and length of the latus rectum of each. Then sketch the graph.

1) $-2(y-2) = (x+5)^2$

Vertex $(-5, 2)$ focus $(-5, 3/2)$ axis of sym: $x = -5$ directrix: $y = 5/2$

Opens down

latus rectum = 2

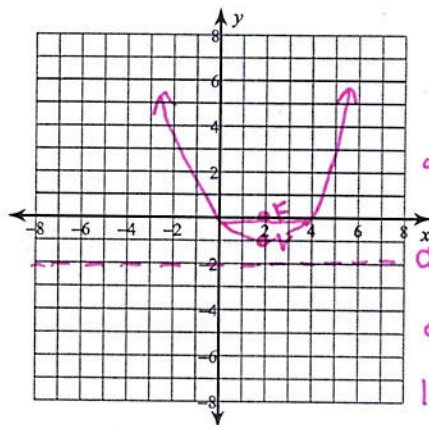
$4p = -2$

$p = -1/2$

 $p \rightarrow$ distance from focus to vertex

or distance from vertex to directrix

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

Vertex: $(2, -1)$ focus: $(2, 0)$ axis of sym: $x = 2$ directrix: $y = -2$

opens up

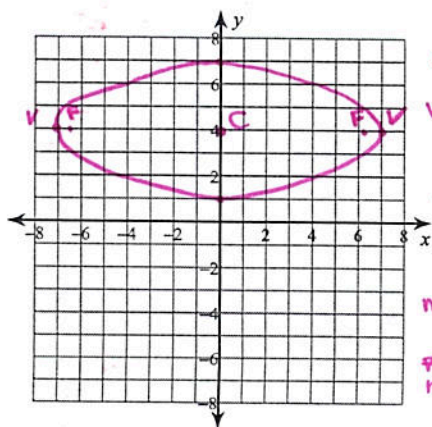
latus rectum: 4

$4p = 4$

$p = 1$

Identify the center, vertices, foci, length of the major axis, and length of the minor axis of each. Then sketch the graph.

3) $\frac{x^2}{49} + \frac{(y-4)^2}{9} = 1$

center: $(0, 4)$ vertices: $(7, 4)$
 $(-7, 4)$ foci: $(\sqrt{40}, 4)$
 $(-\sqrt{40}, 4)$

major axis: 14

minor axis: 6

$a^2 = 49$

$b^2 = 9$

$a = 7$

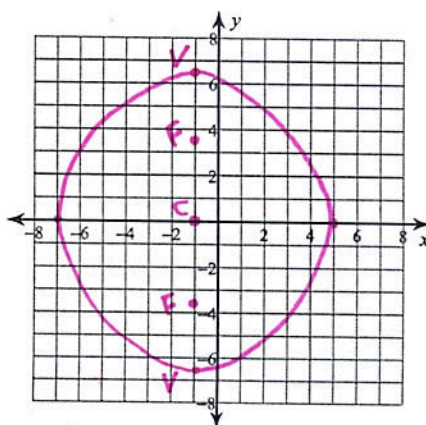
$b = 3$

$a^2 = b^2 + c^2$

$49 = 9 + c^2$

$40 = c^2 \rightarrow c = \sqrt{40}$

4) $\frac{(x+1)^2}{36} + \frac{y^2}{49} = 1$

center: $(-1, 0)$ vertices: $(-1, 7)$
 $(-1, -7)$ foci: $(-1, \sqrt{13})$
 $(-1, -\sqrt{13})$ major axis: 14
minor axis: 6

$a^2 = 49$

$b^2 = 36$

$a = 7$

$b = 6$

$a^2 = b^2 + c^2$

$49 = 36 + c^2$

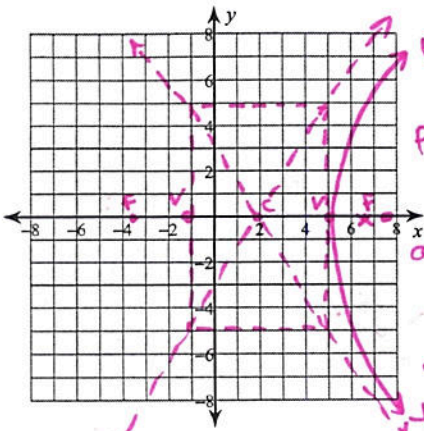
$13 = c^2$

$\sqrt{13} = c$

Identify the vertices, foci, asymptotes, direction of opening, length of the transverse axis, and length of the conjugate axis of each. Then sketch the graph.

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

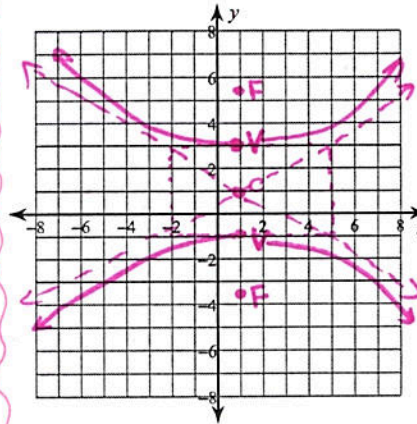
$a^2=9$
 $a=3$
 $b^2=25$
 $b=5$
 $c^2=a^2+b^2$
 $c^2=9+25$
 $c^2=34$
 $c=\sqrt{34}$



vertices: (5, 0)
(-1, 0)
foci: $(2+\sqrt{34}, 0)$
 $(2-\sqrt{34}, 0)$
asymptotes:
 $y = \pm \frac{5}{3}(x-2)$
opens left/right
transverse: 6
conjugate: 10

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

$a^2=4$
 $a=2$
 $b^2=16$
 $b=4$
 $c^2=4+16$
 $c=\sqrt{20}$

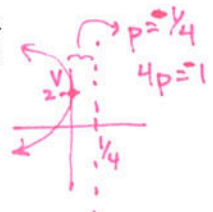


vertices: (1, 3)
(1, -1)
foci: $(1, 1+\sqrt{20})$
 $(1, 1-\sqrt{20})$
asymptotes:
 $y = \pm \frac{1}{2}(x-1) + 1$
opens up/down
transverse: 4
conjugate: 8

Use the information provided to write the transformational form equation of each parabola.

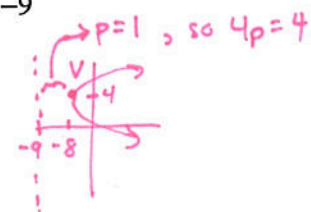
7) Vertex: (0, 2), Directrix: $x = \frac{1}{4}$

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



8) Vertex: (-8, 4), Directrix: $x = -9$

$(y-4)^2 = 4(x+8)$



Use the information provided to write the standard form equation of each ellipse.

9) Foci: (-9, 2), (-9, -4) $\rightarrow c=3$
Endpoints of minor axis: (-5, -1), (-13, -1) \rightarrow center (-9, -1)

$\frac{(x+9)^2}{16} + \frac{(y+1)^2}{25} = 1$

$2b=8$
 $b=4$
 $a^2=b^2+c^2$
 $a^2=4^2+3^2$
 $a^2=25$
 $a=5$

10) Foci: (20, -2), (-4, -2) $\rightarrow c=12$
Endpoints of minor axis: (8, 3), (8, -7) \rightarrow center: (8, -2)

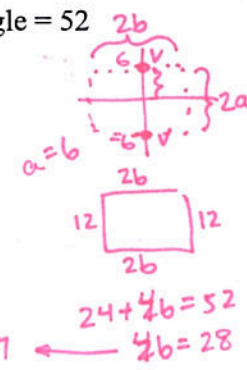
$\frac{(x-8)^2}{169} + \frac{(y+2)^2}{25} = 1$

$2b=10$
 $b=5$
 $a^2=b^2+c^2$
 $a^2=5^2+12^2$
 $a^2=169$
 $a=13$

Use the information provided to write the standard form equation of each hyperbola.

11) Vertices: (0, 6), (0, -6)
Perimeter of Central Rectangle = 52

$\frac{y^2}{36} - \frac{x^2}{49} = 1$



12) Vertices: (3, 0), (-3, 0)
Perimeter of Central Rectangle = 60

$\frac{x^2}{9} - \frac{y^2}{144} = 1$

