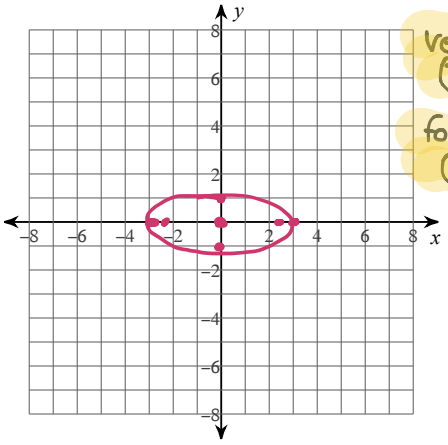
Chapter 9 Review

Name_____

Identify the center, vertices, and foci of each ellipse. Then sketch the graph.

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

Center = (0,0)
$a = 3$ $c^2 = 9 - 1$
$b = 1$ $c = \sqrt{8} = 2\sqrt{2}$

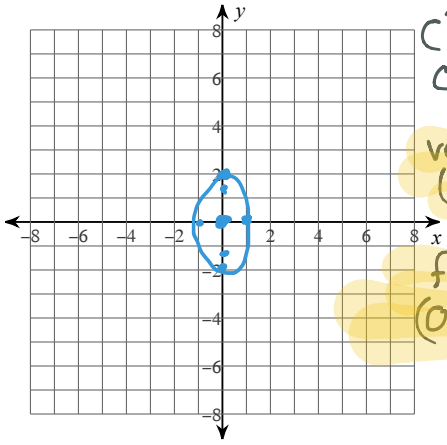


Vertices: (3,0), (-3,0)

Foci: $(2\sqrt{2}, 0), (-2\sqrt{2}, 0)$

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

Center = (0,0)
$a = 2$
$b = 1$
$c^2 = 4 - 1$
$c = \sqrt{3}$

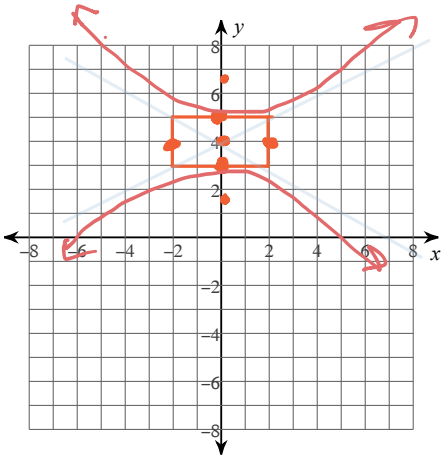


Vertices = (0,2), (0,-2)

Foci = $(0, \sqrt{3}), (0, -\sqrt{3})$

Identify the vertices, foci, and asymptotes of each hyperbola. Then sketch the graph. Does the hyperbola have a horizontal transverse axis or a vertical transverse axis?

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



Center: (0, 4)

$a = 1$

$b = 2$

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

$c^2 = 1 + 4$

$c = \sqrt{5}$

Asymptotes for a Hyperbola

Horizontal Hyperbola	Vertical Hyperbola
$y = k \pm \frac{b}{a}(x-h)$	$y = k \pm \frac{a}{b}(x-h)$

Vertices: (0, 5), (0, 3)

Foci: $(0, 4 \pm \sqrt{5})$

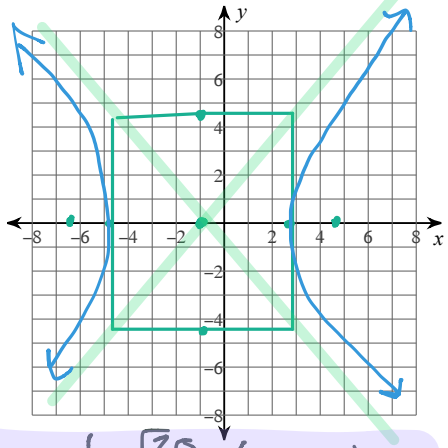
Vertical Axis

Asymptotes =

$y = 4 \pm \frac{1}{2}(x - 0)$

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

4) $\frac{(x+1)^2}{15} - \frac{y^2}{20} = 1$



center: (-1, 0) vertices: $(-1 \pm \sqrt{15}, 0)$

$a = \sqrt{15}$

$b = \sqrt{20} = 2\sqrt{5}$

$c^2 = 15 + 20$

foci: $(-1 \pm \sqrt{35}, 0)$

$c^2 = 35$

$c = \sqrt{35}$

Horizontal Axis

$y = \pm \frac{\sqrt{20}}{\sqrt{15}}(x+1)$

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

5) $4x^2 + 9y^2 - 144 = 0$

$4x^2 + 9y^2 = 144$

$\frac{4x^2}{144} + \frac{9y^2}{144} = 1$

$\frac{x^2}{36} + \frac{y^2}{16} = 1$

6) $x^2 + 4y^2 - 100 = 0$

$\frac{x^2}{100} + \frac{4y^2}{100} = \frac{100}{100}$

$\frac{x^2}{100} + \frac{y^2}{25} = 1$

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

7) Center: $(7, -12)$
Radius: 2

$(x-7)^2 + (y+12)^2 = 4$

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

8) Vertex: $(-6, 0)$, Focus: $\left(-6, -\frac{1}{2}\right)$

$p = \frac{1}{2}$

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

9) Vertex: $(-4, 7)$, Focus: $\left(-\frac{15}{4}, 7\right)$

$p = \frac{1}{4}$

$(y+7)^2 = (x+4)$

Classify each conic section.

10) $-y^2 + x + 4y + 1 = 0$

parabola

11) $x^2 - 2x + 3y - 17 = 0$

parabola

12) $4y^2 + x + 40y + 103 = 0$

parabola

13) $2y^2 + x - 16y + 32 = 0$

parabola

... I didn't mean for them to all be parabolas

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