CARD SORT: CATEGORY CARDS

Hyperbola	**Parabola**
Ellipse	**Circle**

CARD SORT: SORTING CARDS

$$y = a(x-h)^2 + k$$

Vertex: (h, k)

If $a > 0$, opens up

If $a < 0$, opens down

Focus: $\left(h, k + \dfrac{1}{4a}\right)$

Directrix: $y = k - \dfrac{1}{4a}$

$$\dfrac{(x-h)^2}{a^2} - \dfrac{(y-k)^2}{b^2} = 1$$

Center: (h, k)

Asymptotes: $y = \dfrac{b}{a}(x-h) + k$ &

$$y = -\dfrac{b}{a}(x-h) + k$$

Vertices: $(h+a, k)$ & $(h-a, k)$

$$\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1$$

Center: $(0, 0)$

Asymptotes: $y = \dfrac{b}{a}x$ & $y = -\dfrac{b}{a}x$

Vertices: $(a, 0)$ & $(-a, 0)$

$$x = a(y-k)^2 + h$$

Vertex: (h, k)

If $a > 0$, opens right

If $a < 0$, opens left

Focus: $\left(h + \dfrac{1}{4a}, k\right)$

Directrix: $x = h - \dfrac{1}{4a}$

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$$

Center: (h, k)

If $a > b$, the major axis is parallel to the x-axis, the length of the major axis is $2a$ and the length of the minor axis is $2b$.
If $b > a$, the major axis is parallel to the y-axis, the length of the major axis is $2b$ and the length of the minor axis is $2a$.

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

Center: $(0, 0)$

If $a > b$, the major axis is parallel to the x-axis, the length of the major axis is $2a$ and the length of the minor axis is $2b$.
If $b > a$, the major axis is parallel to the y-axis, the length of the major axis is $2b$ and the length of the minor axis is $2a$.

$$x^2 + y^2 = r^2$$

Center: $(0, 0)$

Radius: r

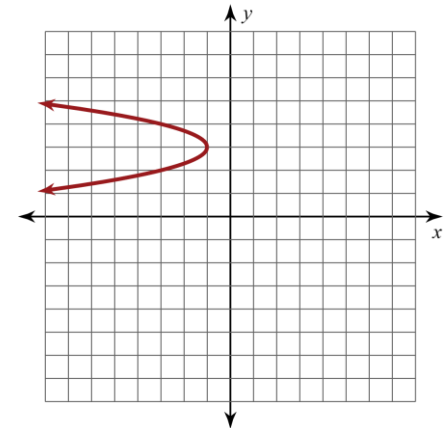$$(x-h)^2 + (y-k)^2 = r^2$$

Center: (h, k)

Radius: r

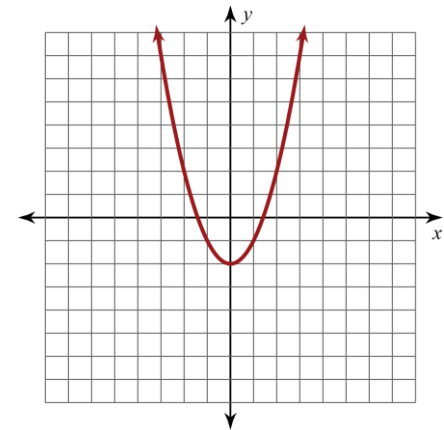| θ	Q	12
$x = -2(y-3)^2 - 1$	Vertex: $(-1, 3)$ Opens left Focus: $\left(-\dfrac{9}{8}, 3\right)$ Directrix: $x = -\dfrac{7}{8}$	
β	X	18
$y = x^2 - 2$	Vertex: $(0, -2)$ Opens up Focus: $\left(0, -\dfrac{7}{4}\right)$ Directrix: $y = -\dfrac{9}{4}$	

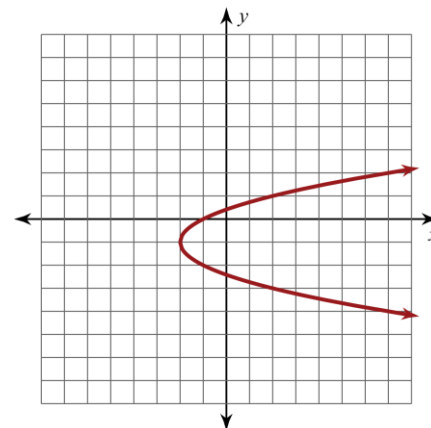$$x = (y+1)^2 - 2$$

Vertex: $(-2, -1)$

Opens right

Focus: $\left(-\dfrac{7}{4}, -1\right)$

Directrix: $x = -\dfrac{9}{4}$

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

Vertex: $(-1, -1)$

Opens down

Focus: $\left(-1, -\dfrac{9}{8}\right)$

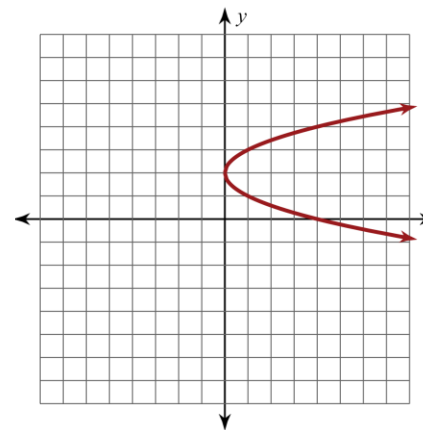Directrix: $x = -\dfrac{7}{8}$

π
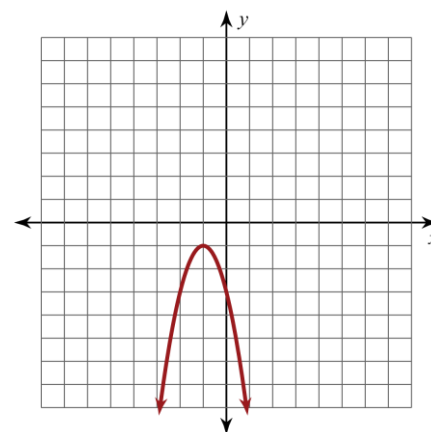
$$x = (y-2)^2$$

G

Vertex: $(0, 2)$

Opens right

Focus: $\left(\dfrac{1}{4}, 2\right)$
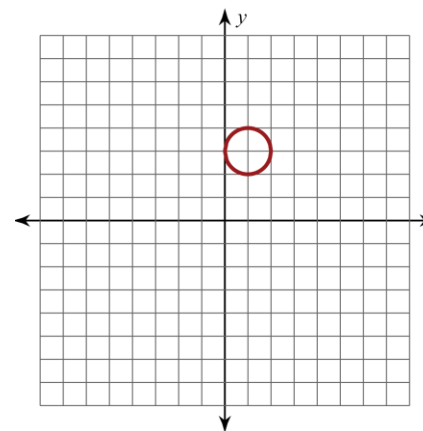
Directrix: $x = -\dfrac{1}{4}$

15

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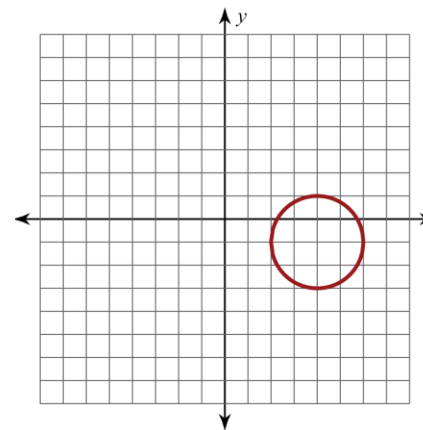$$(x-1)^2 + (y-3)^2 = 1$$

N

Center: $(1,\ 3)$

Radius: 1

9

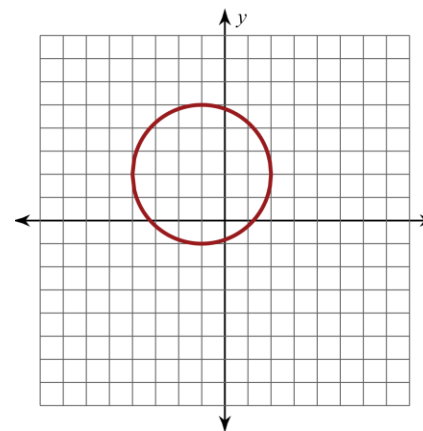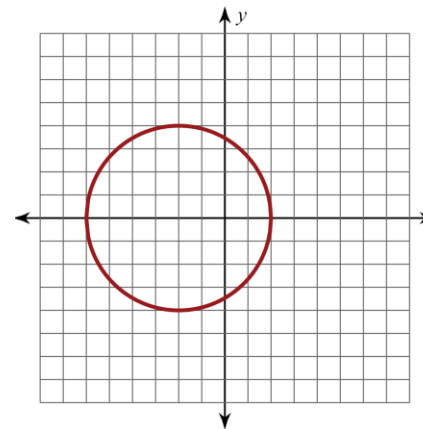| #	U	10
$(x-4)^2 + (y+1)^2 = 4$	Center: $(4, -1)$ Radius: 2	
$	K	2
$(x+1)^2 + (y-2)^2 = 9$	Center: $(-1, 2)$ Radius: 3	

$$(x+2)^2 + y^2 = 16$$

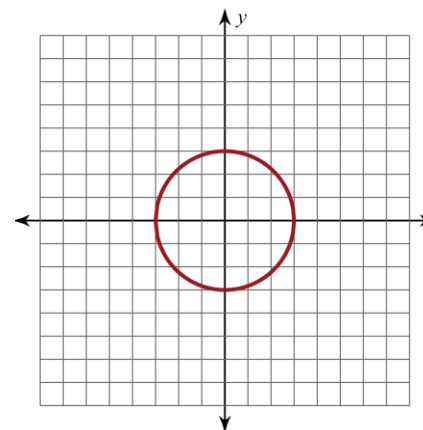Center: $(-2,\ 0)$

Radius: 4

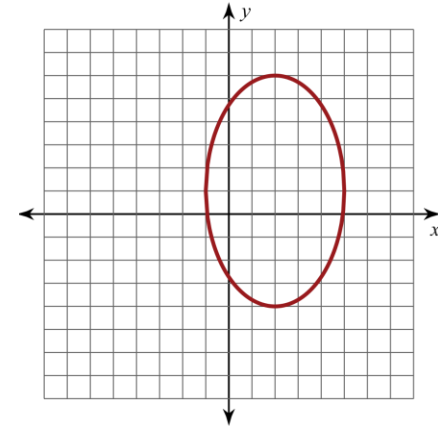$$x^2 + y^2 = 9$$

Center: $(0,\ 0)$

Radius: 3

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

W

Center: $(2,\ 1)$

Major axis is parallel to the y-axis

Length of the major axis: 10

Length of the minor axis: 6
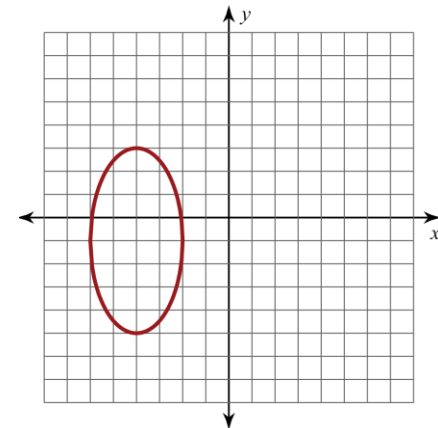
19

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

Z

Center: $(-4,\ -1)$

Major axis is parallel to the y-axis

Length of the major axis: 8

Length of the minor axis: 4
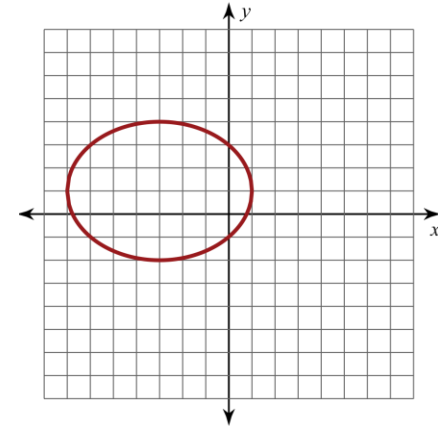
13

$$\frac{(x+3)^2}{16} + \frac{(y-1)^2}{9} = 1$$

Center: $(-3,\ 1)$

Major axis is parallel to the x-axis

Length of the major axis: 8

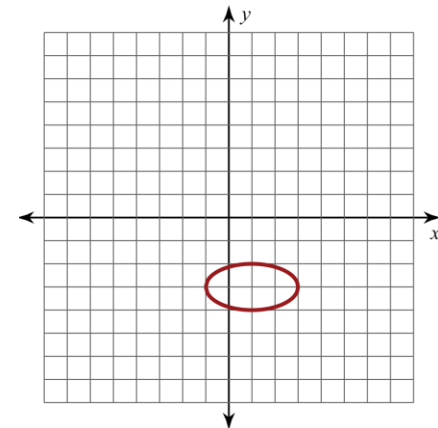Length of the minor axis: 6

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

Center: $(1,\ -3)$

Major axis is parallel to the x-axis

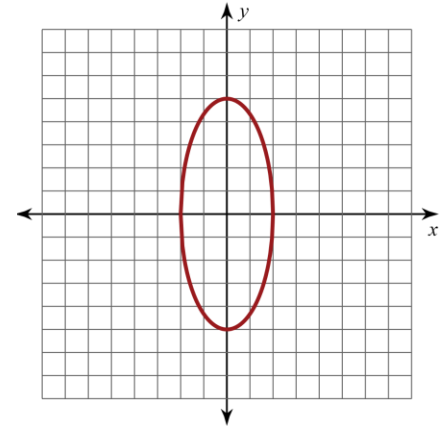Length of the major axis: 4

Length of the minor axis: 2

*

$$\frac{x^2}{4} + \frac{y^2}{25} = 1$$

H

Center: $(0,\ 0)$

Major axis lies on the y-axis

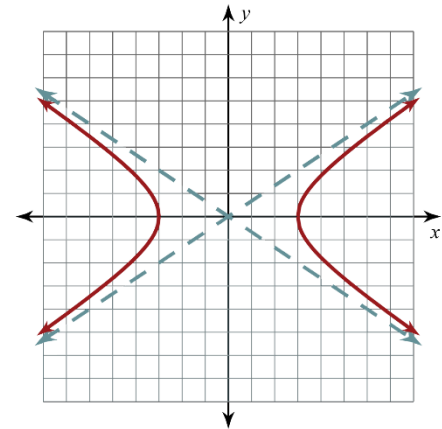Length of the major axis: 10

Length of the minor axis: 4

6

>

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

D

Center: $(0,\ 0)$

Asymptotes: $y = \dfrac{2}{3}x\ $ &

$y = -\dfrac{2}{3}x$

Vertices: $(3,\ 0)$ & $(-3,\ 0)$

3

&

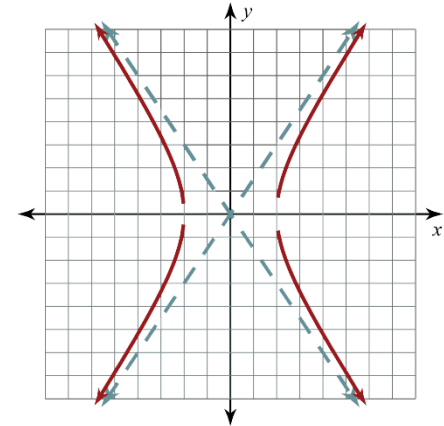$$\frac{x^2}{4} - \frac{y^2}{9} = 1$$

M

Center: $(0, 0)$

Asymptotes: $y = \frac{3}{2}x$ &

$$y = -\frac{3}{2}x$$

Vertices: $(2, 0)$ & $(-2, 0)$

11

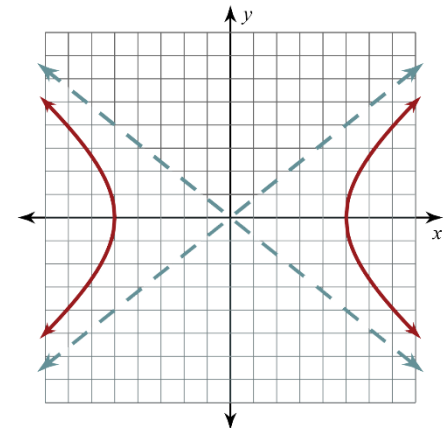**^**

$$\frac{x^2}{25} - \frac{y^2}{16} = 1$$

Y

Center: $(0, 0)$

Asymptotes: $y = \frac{4}{5}x$ &

$$y = -\frac{4}{5}x$$

Vertices: $(5, 0)$ & $(-5, 0)$

4

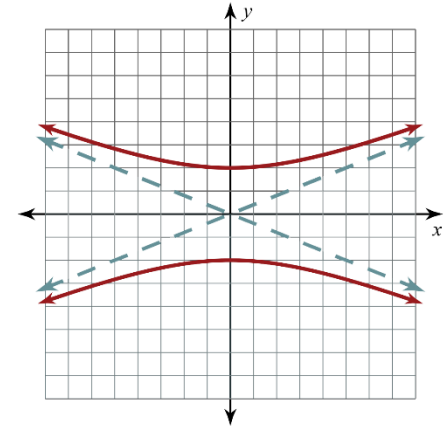| ?	V	20
$$\dfrac{y^2}{4} - \dfrac{x^2}{25} = 1$$	Center: $(0, 0)$ Asymptotes: $y = \dfrac{2}{5}x$ & $y = -\dfrac{2}{5}x$ Vertices: $(0, 2)$ & $(0, -2)$	
𝄞	**C** Center: $(0, 0)$ Asymptotes: $y = \dfrac{1}{4}x$ & $y = -\dfrac{1}{4}x$ Vertices: $(0, 1)$ & $(0, -1)$	**14**
	$$y^2 - \dfrac{x^2}{16} = 1$$	