Warm-up

Change from general to standard form. Then, Find the radius center and radius.

$$x^2 + y^2 - 6x + 10y - 15 = 0$$

EOC REVIEW

Question of the Day

Review HW

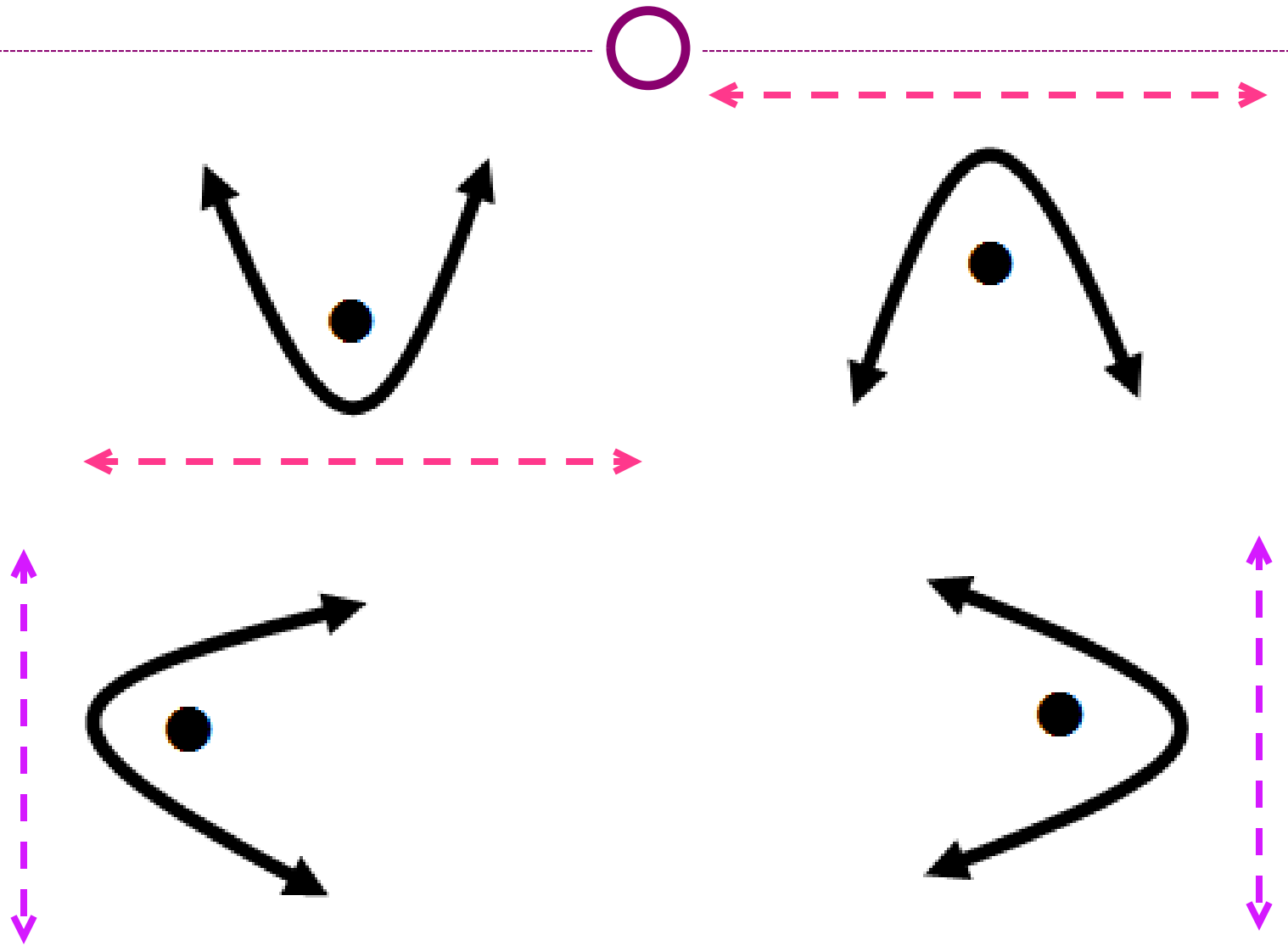
Parabolas

GRAPHING PARABOLAS AS CONIC SECTIONS

Parabolas

They are like a line that has bent around a focus point.

Parabolas can open 4 different ways.



You will need to know how to be able to identify the:

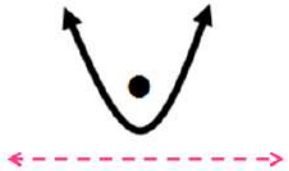
- Vertex
- Focus
- Directrix
- p-value
- Focal Width

p-value

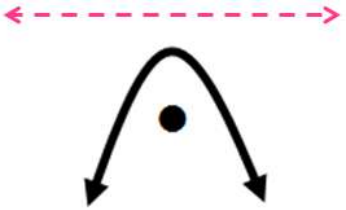
- Distance from the vertex to the focus and
- Distance from the vertex to the directrix

When X is squared

- If p is POSITIVE the parabola opens UP

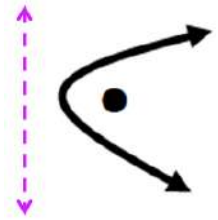


- If p is NEGATIVE the parabola opens DOWN

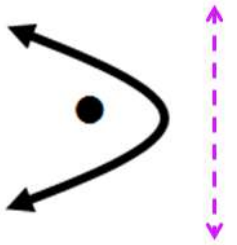


When y is squared

- If p is **POSITIVE** the parabola opens **RIGHT**



- If p is **NEGATIVE** the parabola opens **LEFT**



Formulas

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

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

Vertex (h, k)

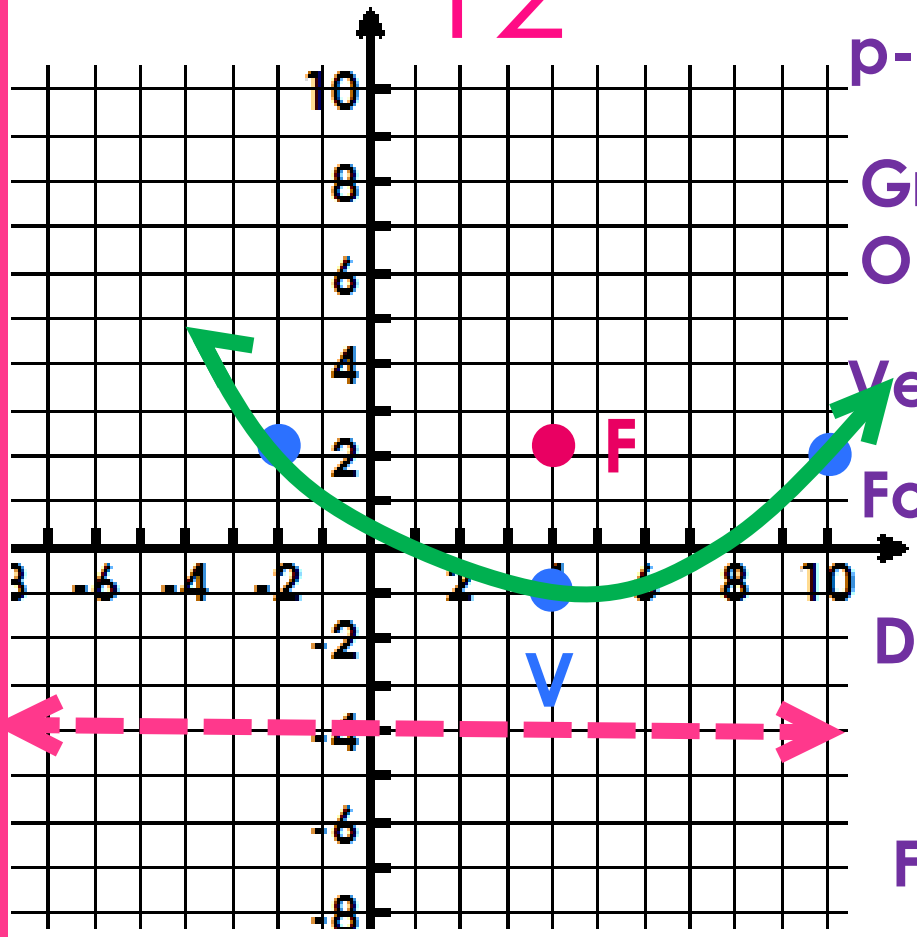
Graphing Parabolas

1. Find the p-value by dividing the denominator by 4.
2. Determine which way the graph will open (up, down, left, or right).
3. Find the VERTEX (h, k) and plot it.
4. Depending on the way the parabola opens, use the p-value to graph the DIRECTRIX and FOCUS.
5. Plot the 2 points for the Focal Width from the Focus. FW = |4p|

1.

Graph

$$y+1=\frac{1}{12}(x-4)^2$$



p-value is 3

Graph Opens up

Vertex (4, -1)

Focus (4, 2)

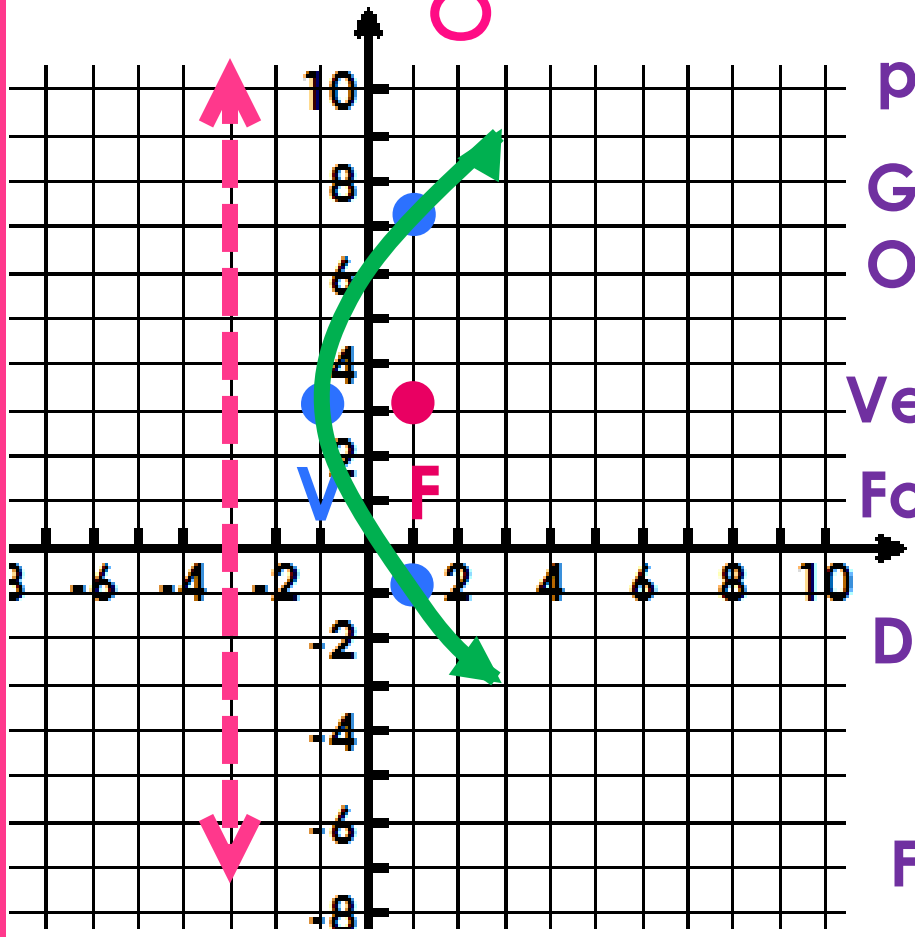
Directrix: y = -4

F.W. = 12

2.

Graph

$$x+1=\frac{1}{8}(y-3)^2$$



p-value is 2

Graph
Opens right

Vertex (-1, 3)

Focus (1, 3)

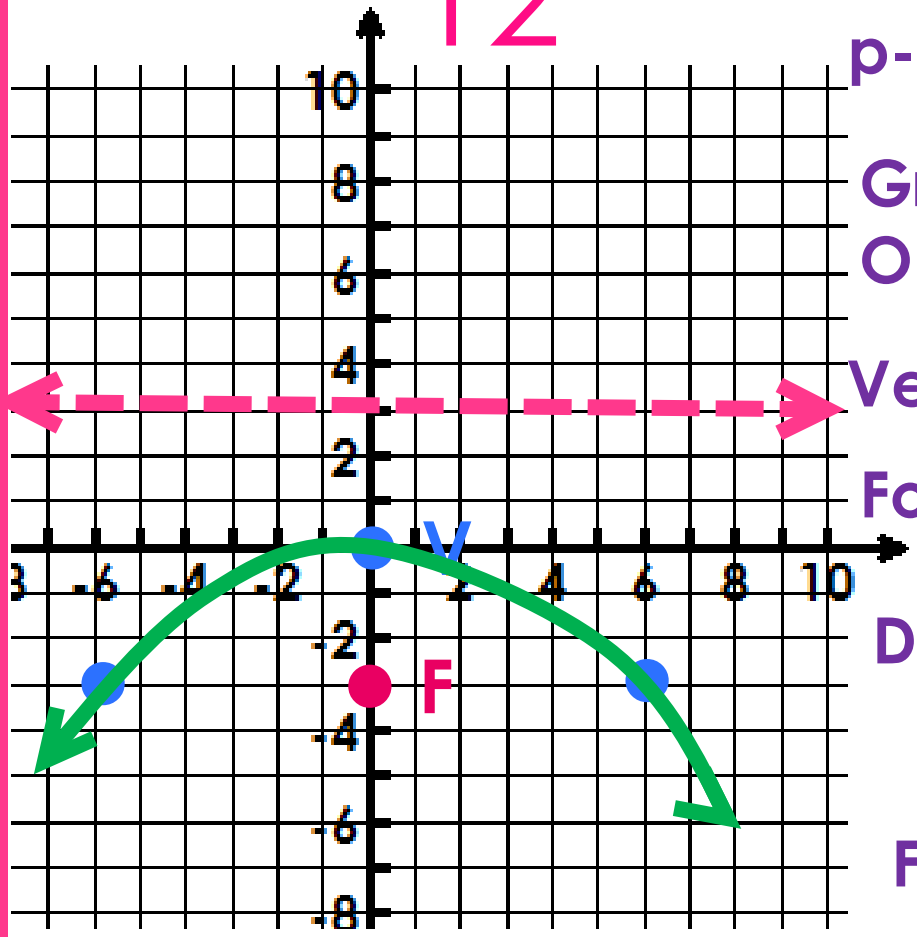
Directrix:
x = -3

F.W. = 8

3.

Graph

$$y = -\frac{1}{12}x^2$$



p-value is -3

Graph Opens down

Vertex (0, 0)

Focus (0, -3)

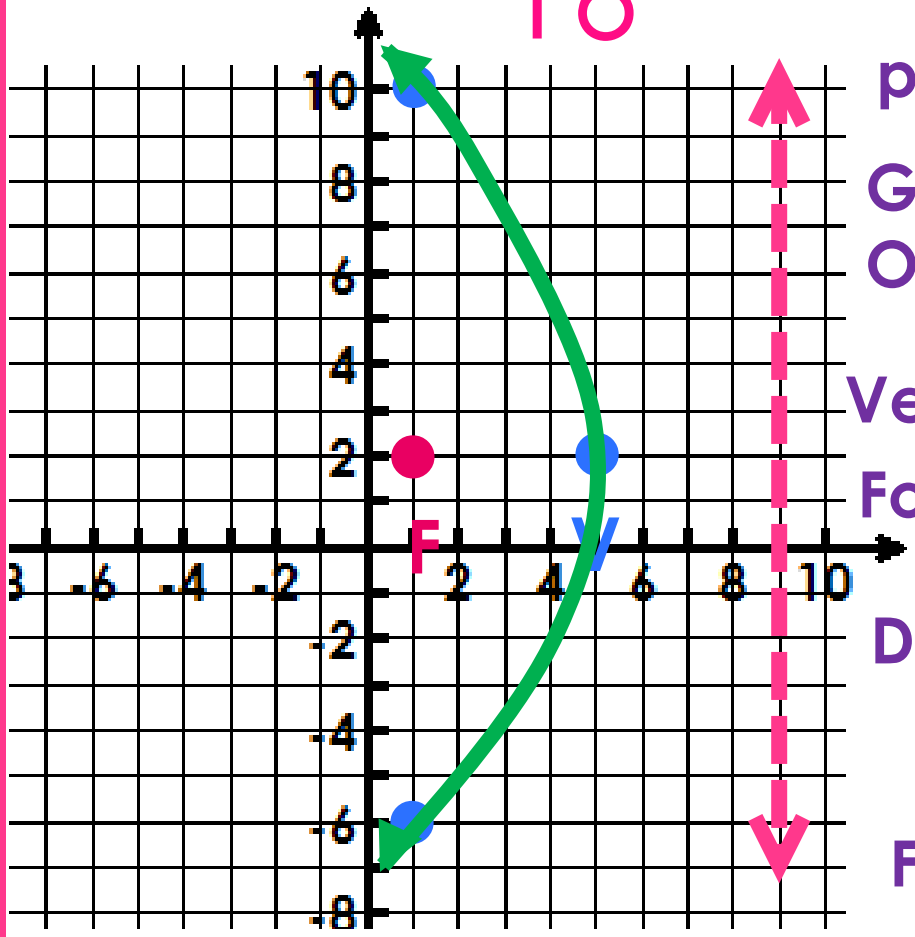
Directrix: y = 3

F.W. = 12

4.

Graph

$$x - 5 = -\frac{1}{16}(y - 2)^2$$



p-value is -4

Graph Opens left

Vertex (5, 2)

Focus (1, 2)

Directrix: x = 9

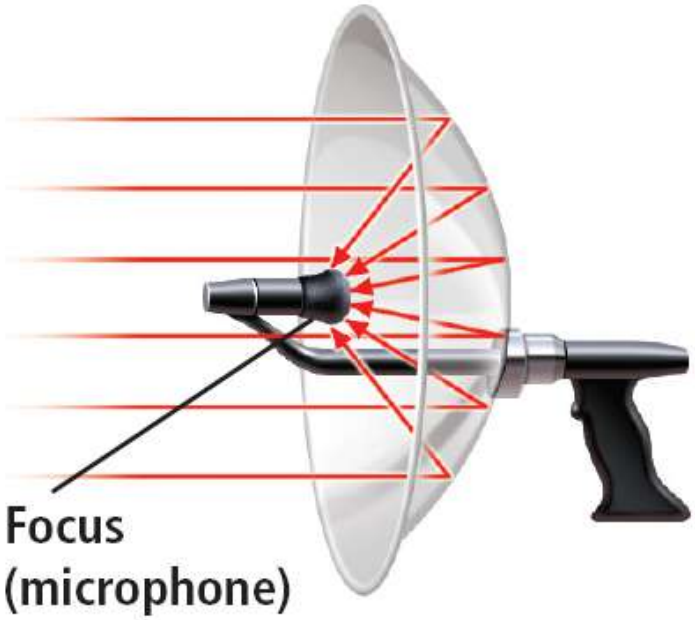
F.W. = 16

Parabolas

Light or sound waves collected by a parabola will be reflected by the curve through the focus of the parabola,

Waves emitted from the focus will be reflected out parallel to the axis of symmetry of a parabola.

This property is used in communications technology.



Parabolas

You learned that the graph of a quadratic function is a parabola. Because a parabola is a conic section, it can also be defined in terms of distance.

This is a picture of a parabolic microphone often seen on the sidelines at sporting events.

Using the Equation of a Parabola

The cross section of a larger parabolic microphone can be modeled by the equation $x = \frac{1}{132} y^2$. What is the length of the feedhorn?

The equation for the cross section is in the form $x = \frac{1}{4p} y^2$, so $4p = 132$ and $p = 33$. The **focus** should be 33 inches from the vertex of the cross section.

Therefore, the feedhorn should be 33 inches long.

CW/HW

WORKSHEET

$$y-k=\frac{1}{4p}(x-h)^2 \qquad x-h=\frac{1}{4p}(y-k)^2$$

Vertex (h, k)