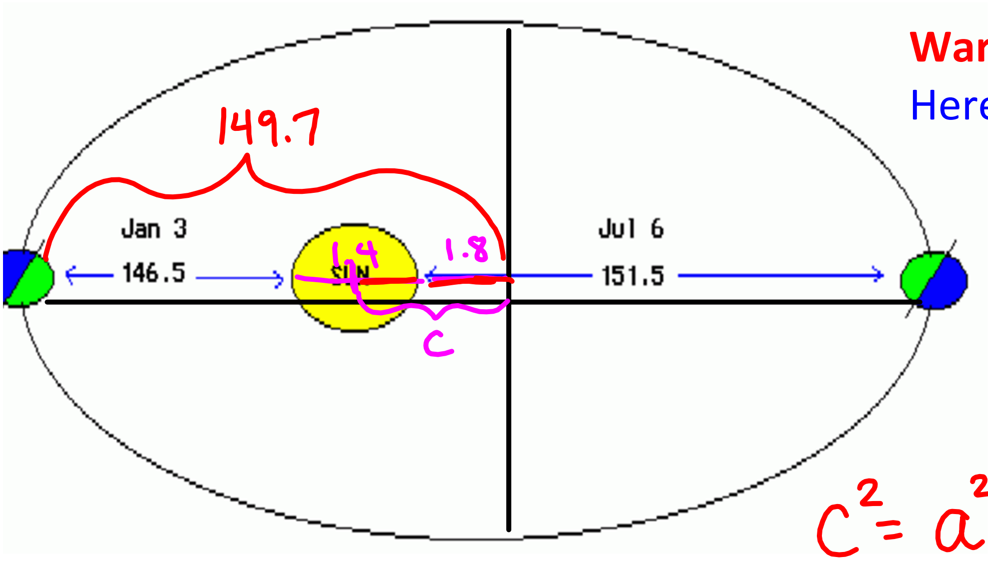


Warm-up:

Here's a good one!

$2a=$

$a=149.7$

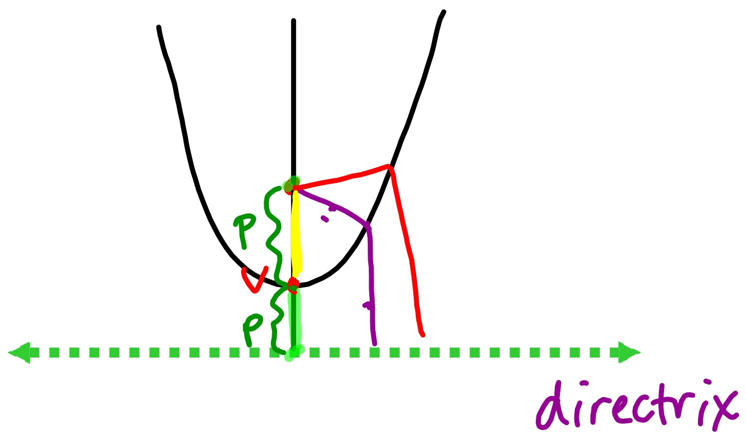
$c=2.5$

$c^2=a^2-b^2$

The sun is a focus of earth's orbit. Find an equation that models the orbit of the Earth if all units are in millions of kilometers and the sun has a diameter of 1.4. You may use a calculator.

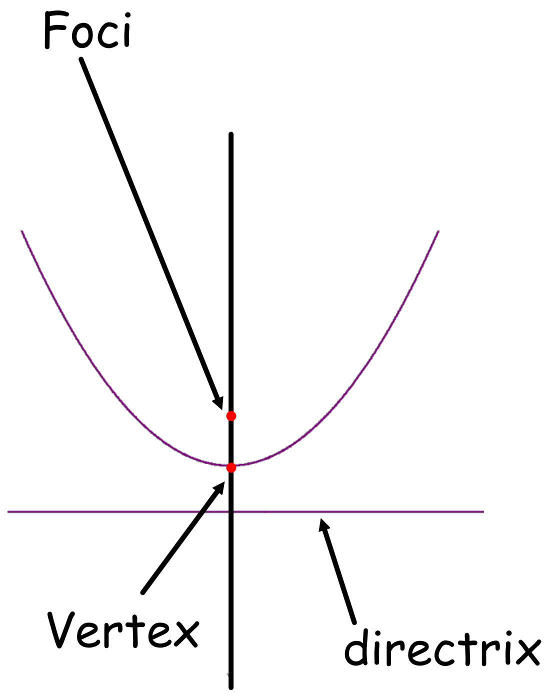
$$\frac{x^2}{22410.9}+\frac{y^2}{22403.84}=1$$

A2T	PC
• function ∪ ∩	• ∪ ∩) (
• vertex	• vertex
• x int, y int	• focus
• axis of sym.	


p
v
p
directrix

Lesson 9.1
Parabolas

Parabolas



A parabola is the set of all points equidistant from a line called the directrix and a point called the focus, not on the line.

The midpoint between the focus and the directrix is the vertex, and the line passing through the focus and the vertex is the axis of the parabola

Standard Equation of a Parabola

The standard form of the equation of a parabola with vertex at (h,k) is as follows:

$(x-h)^2=4p(y-k)$ $p\neq 0$

Vertical axis;
directrix: $y = k-p$

$(y-k)^2=4p(x-h)$ $p\neq 0$

Horizontal axis;
directrix: $x = h-p$

The focus lies on the axis p units (directed distance) from the vertex. If the vertex is at the origin, the equation takes one of the following forms.

$x^2 = 4py$ vertical axis

$y^2 = 4px$ horizontal axis

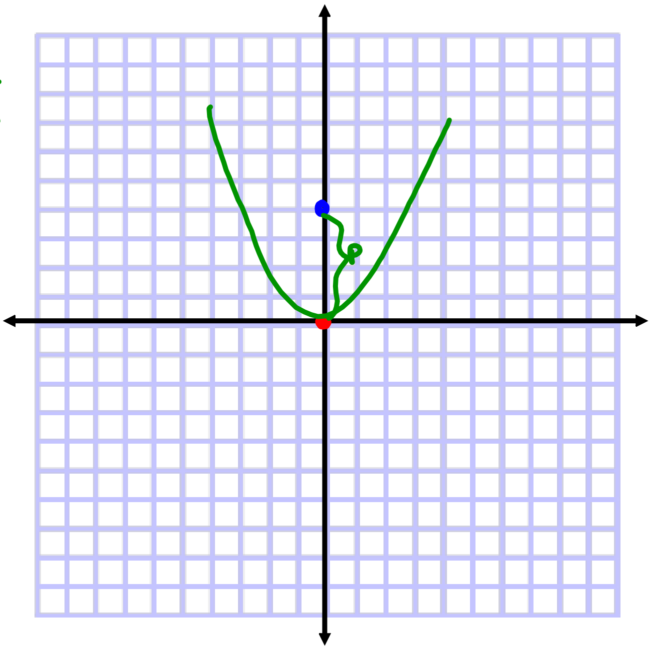
Find the standard form of the equation of the parabola with vertex at the origin and focus (0,4)

V: (0,0)

p=4

$(x-h)^2 = 4p(y-k)$

$x^2 = 16y$



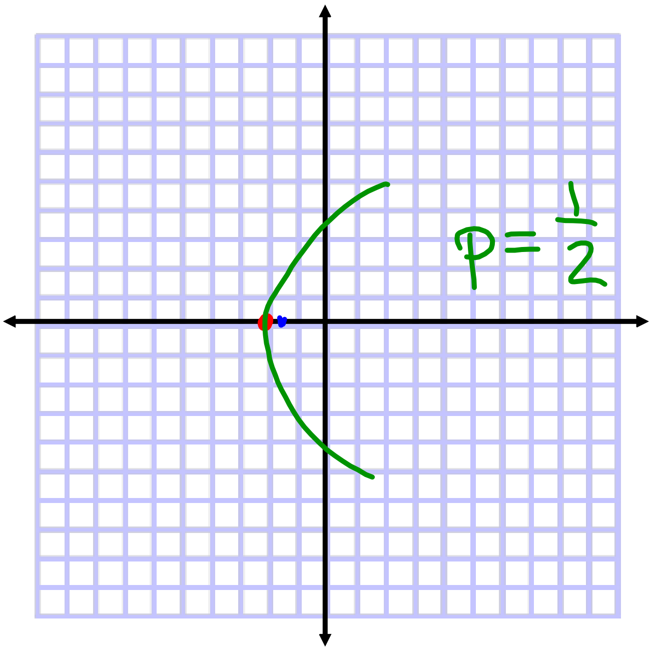
Find the equation in standard form

$vertex: (-2, 0)$

$focus: \left(-\frac{3}{2}, 0\right)$

$(y-k)^2 = 4p(x-h)$

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



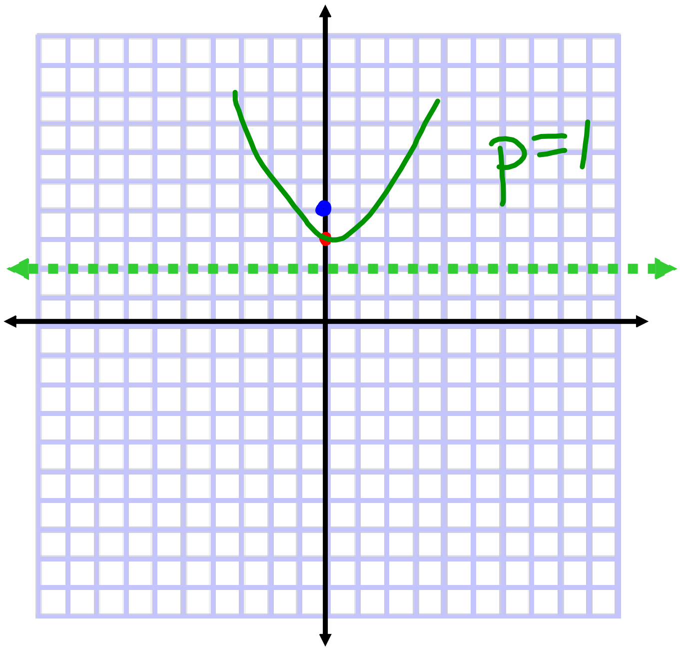
Find the equation in standard form

Focus : (0, 4)

$directrix: y = 2$

Vertex: (0,3)

$x^2 = 4(y-3)$



Find the vertex, focus, and directrix of the parabola. Then sketch its graph.

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

$-6 = 4p$

$p = -\frac{3}{2}$

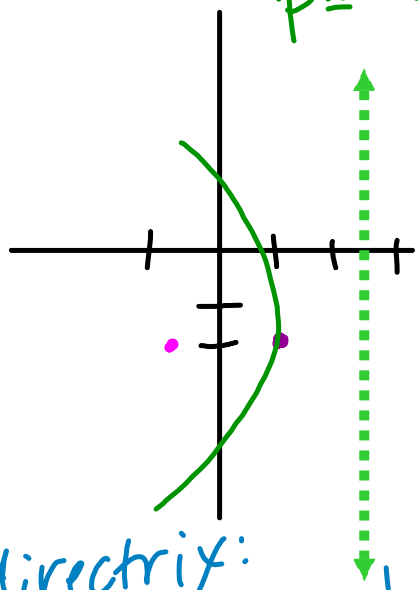
$(y^2 + 4y + 4) = -6x + 2 + 4$

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

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

Vertex: $(1, -2)$

Focus: $(-\frac{1}{2}, -2)$



directrix:
$x = 2\frac{1}{2}$