

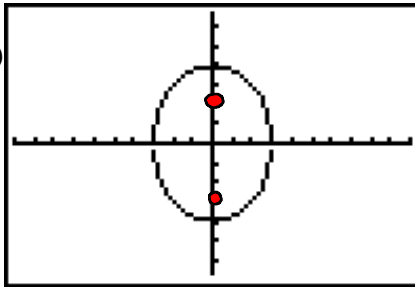
Ellipses

This is the equation of an ellipse which is centered at the origin, (0, 0). Since the value under the y term is larger than the value under the x term, the major axis is the vertical axis.

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

The vertices are (3,0) (3, 0) and (0,4) and (0,-4)

The foci are found by the following formula.
 $c = \sqrt{16 - 9} = \sqrt{7} = 2.6$



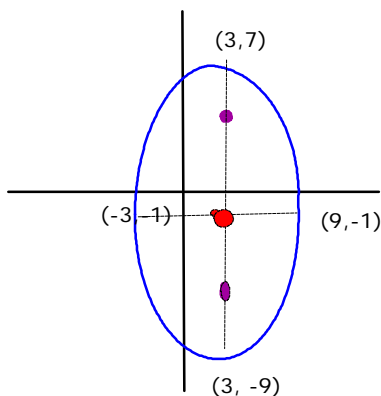
The following is an equation of an ellipse which is NOT centered at the origin.

$$\frac{(x-3)^2}{36} + \frac{(y+1)^2}{64} = 1$$

The center is (h, k) = (3, -1). Count six units from the center left and right.

These will be the vertices on the major axis. (9, -1) and (-3, -1). Count eight units from the center up and down. These will be the vertices on the minor axis. (3, 7) and (3, -9)

The foci are found by the following calculations. $c = \sqrt{64 - 36} = \sqrt{28} = 2\sqrt{7}$



The foci are on the major axis at

$$(3, -1 + 2\sqrt{7}) \text{ and } (3, -1 - 2\sqrt{7})$$

which is approximately (3, 4.3) and (3, -6.3)