

Apr. 5, 2017

Sect. 7-2a

Ellipses (Oval)

St. Form

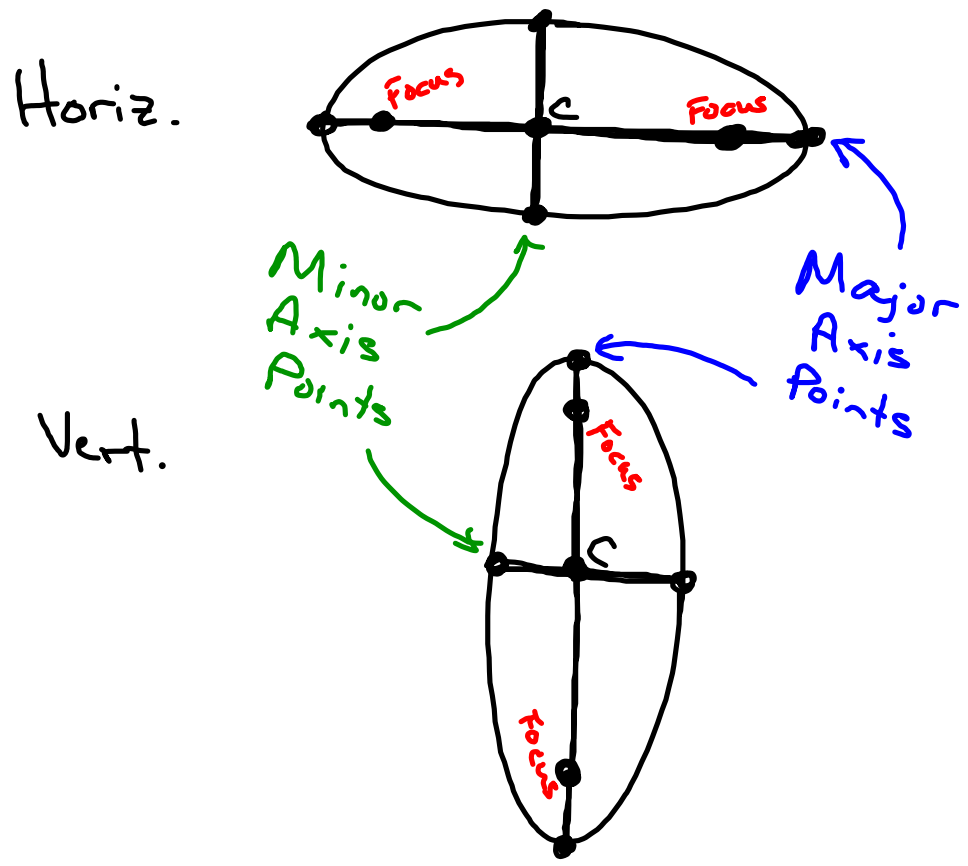
Horiz / Vert.

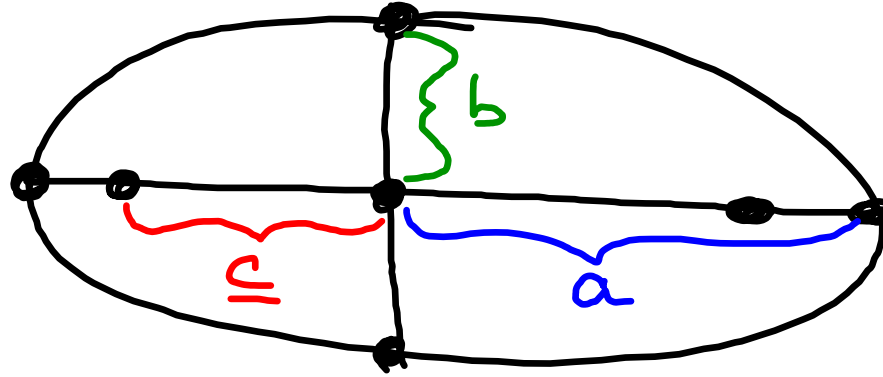
Center

Major Axis (Vertex)

Minor Axis (Co-Vertex)

Foci





St. Form

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

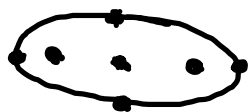
 $a^2$  is the bigger denom.

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

$$\underline{c^2} = a^2 - b^2 \Rightarrow \underline{c} = \sqrt{a^2 - b^2}$$

$$\frac{(x-3)^2}{25} + \frac{(y+1)^2}{9} = 1$$

Horiz:



$$\bar{C}: (3, -1)$$

$$MA: (3 \pm 5, -1)$$

$$mA: (3, -1 \pm 3)$$

$$c = \sqrt{25-9} = \sqrt{16} = 4$$

$$F: (3 \pm 4, -1)$$

$$\frac{(x+1)^2}{169} + \frac{(y-1)^2}{25} = 1$$

Horiz

$$\bar{C} : (-1, 1)$$

$$c = \sqrt{169 - 25} = \sqrt{144} = 12$$



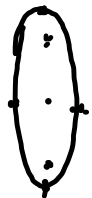
$$MA : (-1 \pm 13, 1)$$

$$F : (-1 \pm 12, 1)$$

$$mA : (-1, 1 \pm 5)$$

$$\frac{(x-2)^2}{36} + \frac{(y+2)^2}{100} = 1$$

Vert:



$$\bar{C} : (2, -2)$$

$$MA : (2, -2 \pm 10)$$

$$mA : (2 \pm 6, -2)$$

$$c = \sqrt{100 - 36} = \sqrt{64} = 8$$

$$F : (2, -2 \pm 8)$$

$$\frac{4(x-1)^2}{12} + \frac{3(y+2)^2}{12} = \frac{12}{12} \Rightarrow \frac{(x-1)^2}{3} + \frac{(y+2)^2}{4} = 1$$

Vert:



$$\bar{C} : (1, -2)$$

$$MA : (1, -2 \pm 2)$$

$$mA : (1 \pm \sqrt{3}, -2)$$

$$c = \sqrt{4-3}$$

$$= \sqrt{1} = 1$$

$$F : (1, -2 \pm 1)$$



$$4x^2 + 6y^2 + 8x - 36y + 34 = 0$$

$$(4x^2 + 8x) + (6y^2 - 36y) = -34$$

$$4(x^2 + 2x) + 6(y^2 - 6y) = -34$$

$$4(x^2 + 2x + \underbrace{(1)^2}) + 6(y^2 - 6y + \underbrace{(3)^2}) = -34 + \underbrace{4 + 54}$$

$$\frac{4(x+1)^2}{24} + \frac{6(y-3)^2}{24} = \frac{24}{24}$$

$$\frac{(x+1)^2}{6} + \frac{(y-3)^2}{4} = 1$$