

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

$c^2 = a^2 - b^2$ OR $b^2 - a^2$, depending on which is bigger: 'a' or 'b'.

c is distance from center to the foci.

Foci (Focuses) lie on the major (long) axis.

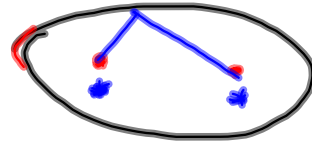
Quiz Monday over previous homework OR

Two quizzes on Friday: HOME 07 C3
HOME 08 C4

Bonus Material: Conics. (Chapter 6)

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

Center is (h, k)



Find the standard form and graph the ellipse.
Show the foci.

$$x^2 + y^2 + 4x - 10y - 759 = 0$$

$$x^2 + 4x + 2^2 + y^2 - 10y + 5^2 = 759 + 4 + 25$$

$$(x+2)^2 + (y-5)^2 = \text{Dummy}$$

$$\frac{(x+2)^2}{49} + \frac{(y-5)^2}{16} = 1$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$16(x+2)^2 + 49(y-5)^2 = 784$$

$$16(x^2 + 4x + 4) + 49(y^2 - 10y + 25) = 784$$

$$16x^2 + 64x + 64 + 49y^2 - 490y + 1225 = 784$$

$$16x^2 + 49y^2 + 64x - 490y + 441 = 0$$

Standard Question

#s 49-52

$$16x^2 + 64x + 64 + 49y^2 - 490y = -441$$

$$16(x^2 + 4x + 2^2) + 49(y^2 - 10y + 5^2) = \underline{-505} + 4(16) + (25)(49)$$

$$16(x+2)^2 + 49(y-5)^2 = 784$$

This is what I should have had when I built this example.

$$\frac{(x+2)^2}{49} + \frac{(y-5)^2}{16} = 1$$

$$(h, k) = (-2, 5)$$

$$c^2 = 49 - 16 = 33$$

$$c \approx 5.74$$

$$49 \text{ is } a^2$$

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

$$= 49 - 16$$

Eccentricity is missing from homework and today's lecture.

$$\text{Eccentricity} = \frac{c}{\text{long side}}$$

$$x^2 + y^2 = 25 = 5^2$$

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

a circle of radius 5.

It has zero eccentricity.

half the length of the major axis

$$r \langle \cos \theta, \sin \theta \rangle$$

$$r \langle b \cos \theta, a \sin \theta \rangle$$