

Lesson 94 Objective: SWBAT solve multi variable systems of equations.

Kickoff

Find the equation of the ellipse and all its key features (center, vertices, and foci). Then sketch it.

$$9x^2 + 4y^2 - 18x + 72y + 189 = 0$$

$$9x^2 - 18x + 4y^2 + 72y = -189$$

$$9(x^2 - 2x) + 4(y^2 + 18y) = -189$$

$$9(x-1)^2 + 4(y+9)^2 = 144$$

$$\frac{(x-1)^2}{16} + \frac{(y+9)^2}{36} = 1$$

Vertical  
C (1, -9)

a = 6  
b = 4

Vertices  
(1, -3) (5, -9) (1, -15) (-3, -9)

Foci  
 $a^2 = b^2 + c^2$  (1, -9 ± 2√5)

$$36 = 16 + c^2$$

$$20 = c^2$$

$$\pm 2\sqrt{5} = c$$

Apr 20-6:48 AM

### Checking on the Calculator

2)  $5a + 6b - 4z = 30$   
 $-2a - b - 3c = -1$   
 $2a - 4b - c = 23$

$(6, -2, -3)$   
 $a, b, c$

$$\begin{bmatrix} 5 & 6 & 0 & 30 \\ -2 & -1 & -3 & -1 \\ 2 & -4 & -1 & 23 \end{bmatrix}$$

\*\*use the matrix in your calculator to check your answers!\*\*

Apr 20-7:37 AM