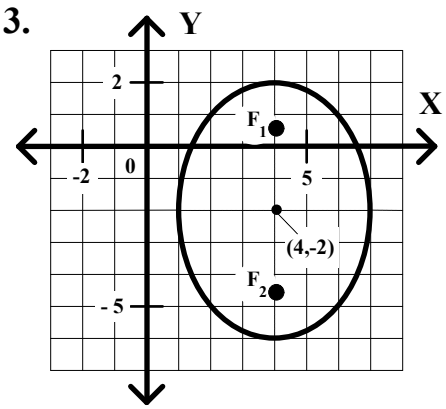
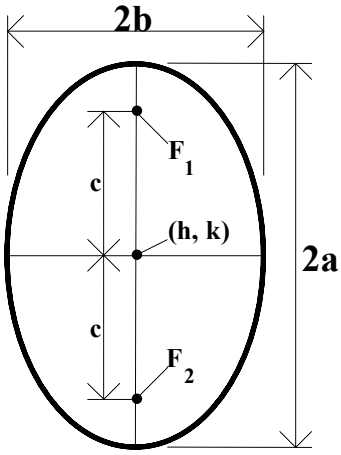
Algebra II Worksheet #2 Unit 7 Selected Solutions

Write the equation in standard form and the equation in general form for each ellipse. Then locate and label the foci F_1 and F_2.

3.



Type 2



center (4, -2) **2a = 8** **2b = 6**

h = 4 **k = -2** **a = 4** **b = 3**

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

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

Standard form

$$\frac{(x-4)^2}{9} + \frac{(y+2)^2}{16} = 1$$

$c^2 = a^2 - b^2$
$c^2 = 4^2 - 3^2$
$c^2 = 16 - 9 = 7$
$c \approx 2.6$

Each focus is on the major axis about 2.6 units from the center.

$16(x-4)^2 + 9(y+2)^2 = 144$
$16(x^2 - 8x + 16) + 9(y^2 + 4y + 4) = 144$
$16x^2 - 128x + 256 + 9y^2 + 36y + 36 = 144$
$16x^2 + 9y^2 - 128x + 36y + 292 = 144$
$16x^2 + 9y^2 - 128x + 36y + 148 = 0$
general form

Express each equation using 'standard form' and sketch a graph.

7. $4x^2 + 25y^2 + 24x - 100y + 36 = 0$

$(4x^2 + 24x) + (25y^2 - 100y) = -36$

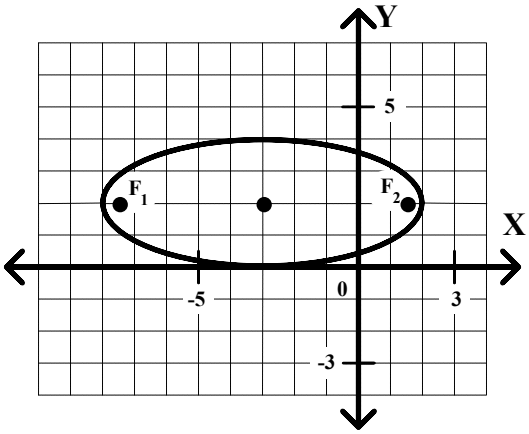
$4(x^2 + 6x \quad) + 25(y^2 - 4y \quad) = -36$

$4(x^2 + 6x + 9) + 25(y^2 - 4y + 4) = -36 + 36 + 100$

$4(x+3)^2 + 25(y-2)^2 = 100$

Standard form

$$\frac{(x+3)^2}{25} + \frac{(y-2)^2}{4} = 1$$



h = -3
k = 2

center (-3, 2)

type 1

$a^2 = 25$ **$b^2 = 4$** **$c^2 = 21$**

a = 5 **b = 2** **$c \approx 4.6$**