MORE PRACTICE: Ellipses

For the following ellipses, find the following:

1. $\dfrac{(x+3)^2}{16} + \dfrac{y^2}{4} = 1$

h = -3, k = 0, a = 4, b = 2

Center $(-3, 0)$

Foci $(-3 \pm \sqrt{12}, 0)$
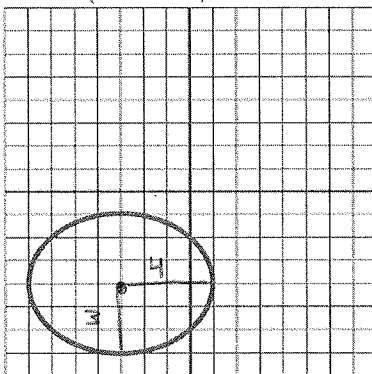
Length of Major Axis 8

Length of Minor Axis 4

$c^2 = a^2 - b^2 = 16 - 4 = 12$

$a = 4, b = 2$

Write the equation of the ellipse:

$h = -3, k = -4$

$\dfrac{(x+3)^2}{16} + \dfrac{(y+4)^2}{9} = 1$

3.

$a = 4$
$b = 3$

2. $\dfrac{(x+2)^2}{81} + \dfrac{(y-6)^2}{121} = 1$

h = -2, k = 6, a = 11, b = 9
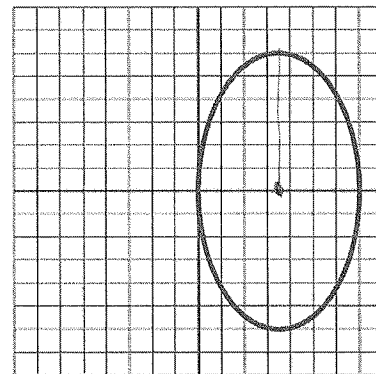
Center $(-2, 6)$

Foci $(-2, 6 \pm \sqrt{40})$

Length of Major Axis 22

Length of Minor Axis 18

$c^2 = 121 - 81 = 40$

$h = 3.5 \quad a = 6$
$K = 0 \quad b = 3.5$

$\dfrac{(x-3.5)^2}{12.25} + \dfrac{y^2}{36} = 1$

4.

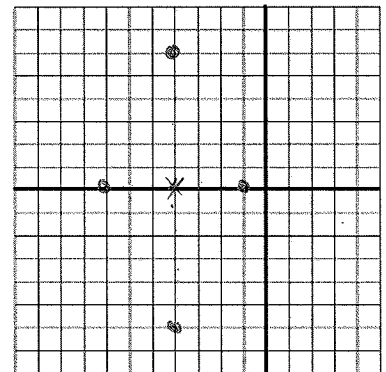Given the following properties, graph the ellipses and write the equation.

6. The endpoints of the major axis are (-4, 6) &(-4, -6), and the endpoints of the minor axis are (−7, 0) & (−1, -0).

$(h, k) = (-4, 0)$

$a = 6, b = 3$

$\dfrac{(x+4)^2}{9} + \dfrac{y^2}{36} = 1$

7. The center is at (1, 4), one focus is at (3, 4) and the length of the minor axis is

6. $b = 3 \qquad c = 3 \qquad (h, k) = (1, 4)$

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

$9 = a^2 - 9$

$18 = a^2 \qquad a = \sqrt{18} = 3\sqrt{2}$

$\dfrac{(x-1)^2}{18} + \dfrac{(y-4)^2}{9} = 1$