2a) i) coordinates of vertices:
(0,-5) and (0,5)

ii) coordinates of foci:
(0,-4) and (0,4)

iii) Major Axis
10 units

Minor Axis
6 units

iv) Equation:

$$\frac{x^2}{(3)^2} + \frac{y^2}{(5)^2} = 1$$

$$\frac{x^2}{9} + \frac{y^2}{25} = 1$$

b) i) coordinates of vertices:
(-4,0) and (4,0)

ii) coordinates of foci:
(-3.5,0) and (3.5,0)

iii) Major Axis
8 units

Minor Axis
4 units

iv) Equation:

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

$$\frac{x^2}{16} + \frac{y^2}{4} = 1$$

c) i) coordinates of vertices:
(0,-3) and (0,3)

ii) coordinates of foci:
(0,-2) and (0,2)

iii) Major Axis
6 units

Minor Axis
4 units.

iv) Equation:

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

$$\frac{x^2}{4} + \frac{y^2}{9} = 1$$

3a) x-ints => -4 and 4
y-ints => -3 and 3

$$\boxed{\frac{x^2}{(x\text{-int})^2} + \frac{y^2}{(y\text{-int})^2} = 1}$$

you can think of your equation like this!

Equation:

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

$$\frac{x^2}{16} + \frac{y^2}{9} = 1$$

b) Major Axis is 8 and horizontal.
Minor Axis is 4

If $\frac{\cancel{2}a}{\cancel{2}} = \frac{8}{2}$
$a = 4$

If $\frac{\cancel{2}b}{\cancel{2}} = \frac{4}{2}$
$b = 2$

Equation:

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

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

$$\frac{x^2}{16} + \frac{y^2}{4} = 1$$

c) One vertex is $(-4,0)$; minor axis is 2

If one vertex is $(-4,0)$, it follows that the other vertex is $(4,0)$

↳ Major axis is 8.

$$\frac{\cancel{2}a}{\cancel{2}} = \frac{8}{2}$$

$$a = 4$$

Minor axis is 2

↳ $\frac{\cancel{2}b}{\cancel{2}} = \frac{2}{2}$

$$b = 1$$

Equation:

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

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

$$\frac{x^2}{16} + \frac{y^2}{1} = 1$$

d) Major axis is 10 and is vertical
Minor axis is 6.

If major axis is 10:

↳ $\frac{\cancel{2}a}{\cancel{2}} = \frac{10}{2}$

$$a = 5$$

If minor axis is 6:

↳ $\frac{\cancel{2}b}{\cancel{2}} = \frac{6}{2}$

$$b = 3$$

Since major axis is vertical:

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

$$\frac{x^2}{(3)^2} + \frac{y^2}{(5)^2} = 1$$

$$\frac{x^2}{9} + \frac{y^2}{25} = 1$$