Question

Graph the equations shown below, the graph is scaled to 10 high and 10 wide.

$$\frac{x^2}{64} + \frac{y^2}{36} = 1$$

$$\frac{x^2}{64} - \frac{y^2}{36} = 1$$

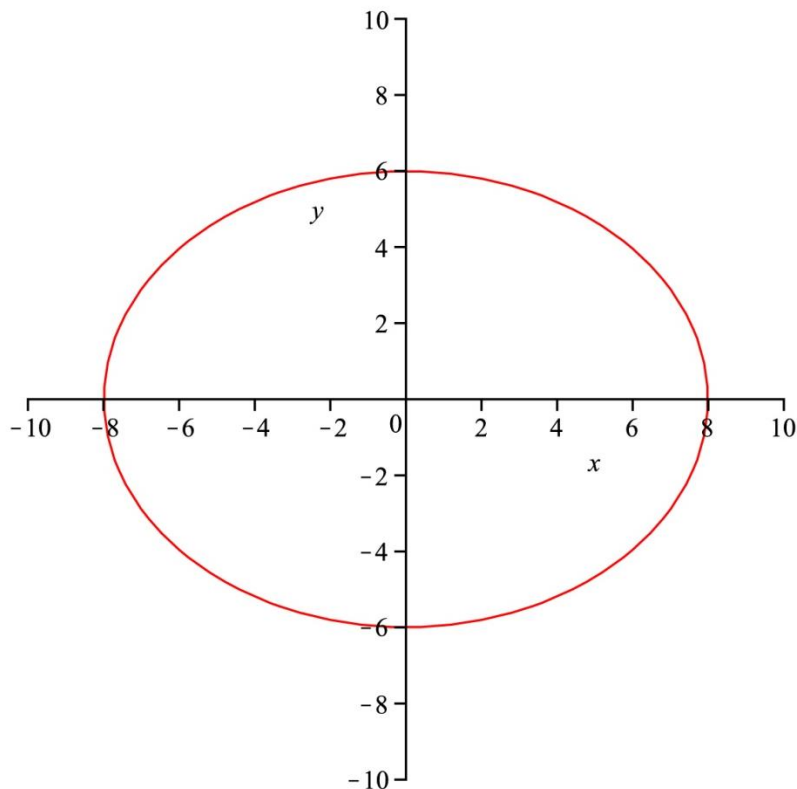$$\frac{x^2}{100} - \frac{y^2}{64} = 1$$

$$\frac{x^2}{100} + \frac{y^2}{64} = 1$$

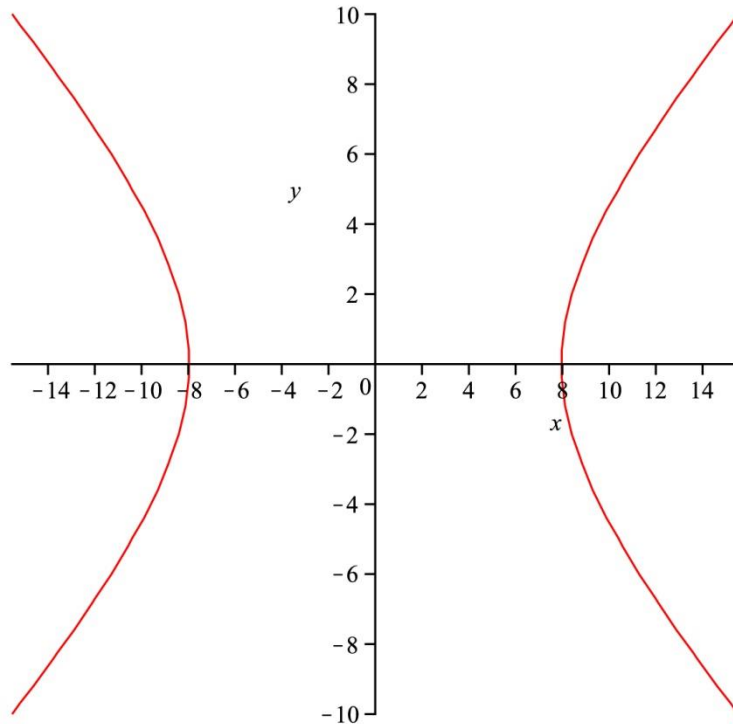**Solution**

1.

$$\frac{x^2}{64} + \frac{y^2}{36} = 1$$

is the equation of ellipse with the semi-major axis $a = \sqrt{64} = 8$, and the semi-minor axis $b = \sqrt{36} = 6$. Then we graph it:
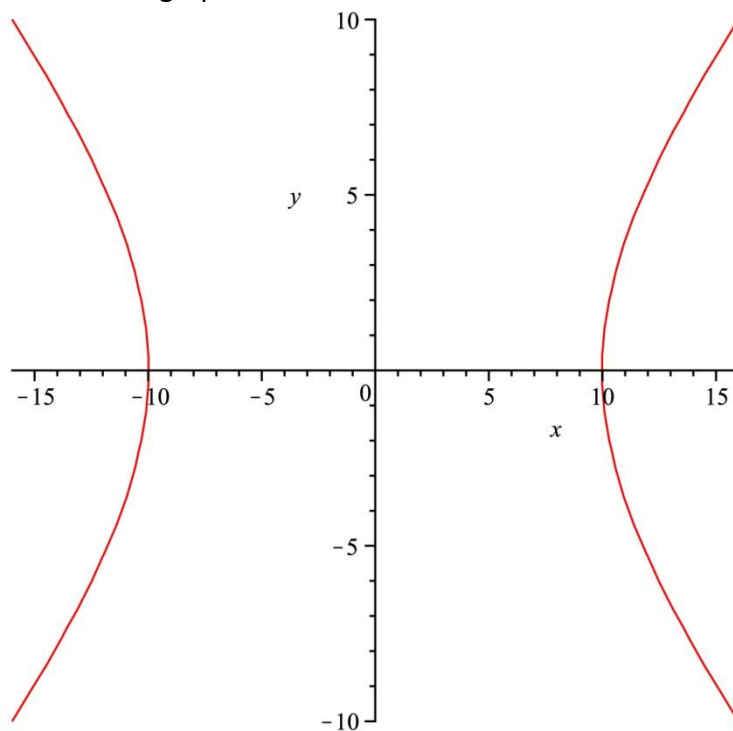

2.

$$\frac{x^2}{64} - \frac{y^2}{36} = 1$$

is the equation of hyperbola with the semi-major axis $a = \sqrt{64} = 8$, and the conjugate axis $2b = 2\sqrt{36} = 12$. Then we graph it:

3.

$$\frac{x^2}{100} - \frac{y^2}{64} = 1$$

is the equation of hyperbola with the semi-major axis $a = \sqrt{100} = 10$, and the conjugate axis $2b = 2\sqrt{64} = 16$. Then we graph it:

4.

$$\frac{x^2}{100} + \frac{y^2}{64} = 1$$

is the equation of ellipse with the semi-major axis $a = \sqrt{100} = 10$, and the semi-minor axis $b = \sqrt{64} = 8$. Then we graph it: