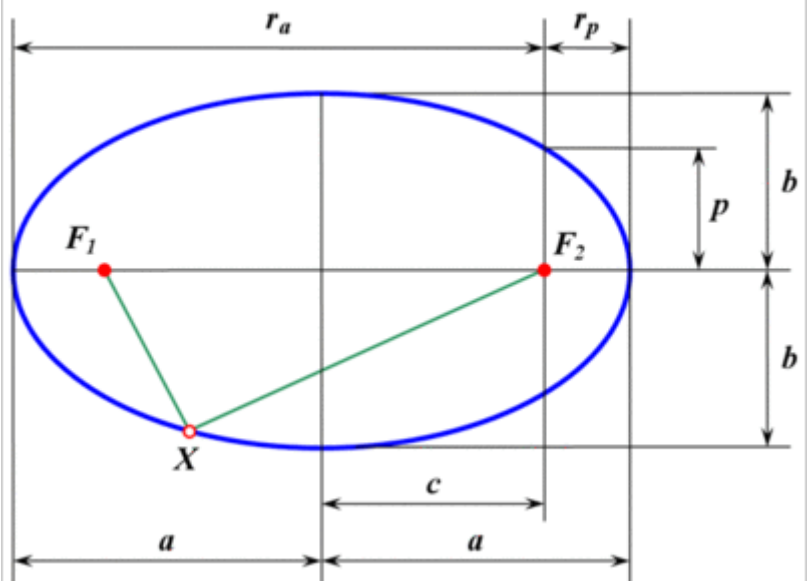
**Task:**

Ends of the major axis of ellipse at (10, -1) and (-4, -1), and one of focus is (8, -1). What is the equation of the ellipse?

**Solution:**




$$a^2 = b^2 + c^2$$

$$e = \frac{c}{a} = \sqrt{1 - \frac{b^2}{a^2}}$$

$$a = \frac{10 - (-4)}{2} = 7$$

$$c = a - (10 - 8) = 5$$

$$\frac{c}{a} = \frac{5}{7} = \sqrt{1 - \frac{b^2}{7^2}}$$

$$b = 2\sqrt{6}$$

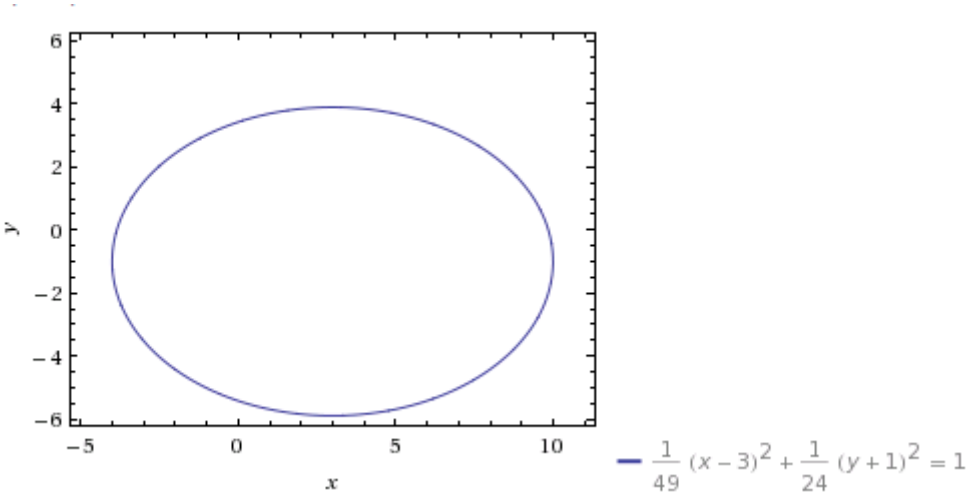
Equation with the center at (0;0)

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

Equation with the center at ($\frac{10-4}{2}$; -1)

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

$$\frac{(x-3)^2}{7^2} + \frac{(y+1)^2}{(2\sqrt{6})^2} = 1$$




**Answer:**

$$\frac{(x-3)^2}{7^2}+\frac{(y+1)^2}{(2\sqrt{6})^2}=1$$