2) A communication satellite is located at an elliptic orbit, having the Earth as one of its focus. The major axis of the orbit is 32,400 miles long and its minor axis is 24,800 miles long. Determine the equation of the orbit and its graph showing the position of the Earth. Assume that the focus is in the "x-axis" and the center is at the origin.

EQUATION

**X^2/262440000+
y^2/153760000**

Elliptic orbit

Focus = Earth $(0, \text{...})$

Major Axis = 32,400

Minor Axis = 24,800

$C(0,0)$

$A = 16200$

$B = 12400$

$C = 10424.97$

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

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

Formula

$$\frac{x^2}{262440000} + \frac{y^2}{153760000} = 1$$

$C = \sqrt{a^2 - b^2}$

$C = \sqrt{16000^2 - 12400^2}$

$C = \sqrt{256000000 - 153760000}$

$C = \sqrt{108680000}$

$C = 10424.97$

center

Focus = Earth

10,000 5,000   5,000   10,000 15,000

scale