

[33] $e = \frac{c}{a} = 0.206 \Rightarrow c = 0.206a$. Since $a = 0.387$, it follows that $c = 0.206(0.387) \approx 0.0797$. Then, the value of b is given by the following.

$$a^2 - b^2 = c^2 \Rightarrow a^2 - c^2 = b^2 \Rightarrow 0.387^2 - 0.0797^2 = b^2 \Rightarrow b^2 = 0.1434 \Rightarrow b = 0.379.$$

The major axis could be located on either the x - or y -axis. We will choose the x -axis. Thus, the equation of the orbit is $\frac{x^2}{0.387^2} + \frac{y^2}{0.379^2} = 1$. The sun can be located on either of the foci. We will locate the sun at $(0.0797, 0)$. To graph the orbit with a graphing calculator, solve the equation for the ellipse for the variable y .

$$\frac{x^2}{0.387^2} + \frac{y^2}{0.379^2} = 1 \Rightarrow y = \pm 0.379\sqrt{1 - x^2/0.387^2}$$

Graph each of these equations and plot the sun at $(0.0797, 0)$. $Y_1 = 0.379\sqrt{1 - X^2/0.387^2}$, $Y_2 = -Y_1$. See *Figure 33*.

$[-0.6, 0.6, 0.1]$ by $[-0.4, 0.4, 0.1]$

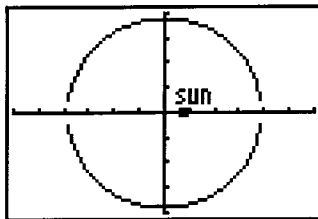


Figure 33