

Answer on Question #45104 – Math – Analytical Geometry

Find an equation in standard form for the ellipse with the vertical major axis of length 18, and minor axis of length 16.

Solution:

Given equation is that of an ellipse with a vertical major axis. Its standard form:

$$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1, a > b, (h, k) = (x, y) \text{ coordinates of center.}$$

Given center: (0,0)

Given length of vertical major axis = 18 = 2a

$$a = 9$$

$$a^2 = 81$$

given length of minor axis = 16 = 2b

$$b = 8$$

$$b^2 = 64$$

Equation:

$$\frac{x^2}{64} + \frac{y^2}{81} = 1$$

Answer: $\frac{x^2}{64} + \frac{y^2}{81} = 1$