**Answer on Question #45379 – Math – Analytical Geometry**

Find the center, vertices, and foci of the ellipse with equation x2 /100+ y2/36 = 1

**Solution:**

$$\frac{x^2}{100}+\frac{y^2}{36}=1$$

Since $x^2 = (x - 0)^2$ and $y^2 = (y - 0)^2$, the equation above is really:

$$\frac{(x-0)^2}{100}+\frac{(y-0)^2}{36}=1$$

Then the center is at $(h,k) = (0,0)$. I know that the $a^2$ is always the larger denominator (and $b^2$ is the smaller denominator), and this larger denominator is under the variable that parallels the longer direction of the ellipse. Since $100$ is larger than $36$, then $a^2 = 100$, $a = \pm\sqrt{100} = \pm 10$, and this ellipse is wider (paralleling the x-axis) than it is tall. The value of $a$ also tells me that the vertices are 10 units to either side of the center, at (–10, 0) and (10, 0).

Let's find co-vertices of the ellipse:

$$b^2 = 36$$

$$b = \pm\sqrt{3}6 = \pm 6$$

Co-vertices: (–6, 0) and (6, 0).

To find the foci, we need to find the value of c. From the equation, I already have $a^2$ and $b^2$, so:

$$a^2 - c^2 = b^2$$

$$100 - c^2 = 36$$

$$c^2 = 64$$

$$c = \pm\sqrt{64} = \pm 8$$

Then the value of c is 8, and the foci are eight units to either side of the center, at (–8, 0) and (8, 0)

**Answer:** center $(0,0)$,
vertices are (–10, 0) and (10, 0), (–6, 0) and (6, 0).
foci are $(-8,0)\text{and }(8,0)$.