

## Answer on Question #57407 – Math – Calculus

### Question

Graph each equation be sure to identify the important features such as the center, vertices, foci, directrix and asymptotes. The graph is scaled 14 tall and 14 wide.

$$\frac{(x + 2)^2}{9} + \frac{(y - 3)^2}{16} = 1.$$

### Solution

The ellipse equation has the form

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

$$\frac{(x + 2)^2}{3^2} + \frac{(y - 3)^2}{4^2} = 1;$$

$$a = 4; b = 3; h = -2; v = 3;$$

$$c = \sqrt{a^2 - b^2} = \sqrt{7}.$$

This is ellipse with the center at  $(h, v) = (-2, 3)$ .

The vertices:  $(h, v + a) = (-2, 7)$ ,  $(h, v - a) = (-2, -1)$ ,  $(h + b, v) = (1, 3)$ ,  $(h - b, v) = (-5, 3)$ .

Foci:  $(h, v + c) = (-2, 3 + \sqrt{7})$ ,  $(h, v - c) = (-2, 3 - \sqrt{7})$ .

Directrix: None.

Asymptotes: None.

Center at  $(-2, 3)$   
Foci at  $(-2, 0.35)$  and  $(-2, 5.6)$

