Answer on Question #53935 – Math - Analytic Geometry

Find the vertices and foci of the hyperbola with equation.

quantity x minus 3 squared divided by 81 minus the quantity of y plus 5 squared divided by 144 equals 1

Solution

$$\frac{(x-3)^2}{81} - \frac{(y+5)^2}{144} = 1$$

Center is $(3, -5)$.

If $y = -5, \quad x = 3 \pm 9,$ **then vertices are** $(-6, -5)$ **and** $(12, -5)$**.**

$c^2 = a^2 + b^2 = 81 + 144 = 225 \rightarrow c = \pm 15,$

thus foci are $(-12, -5) \; and \; (18, -5)$**.**