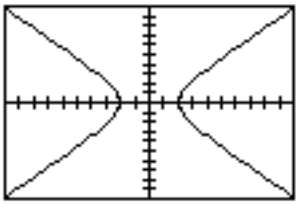
NAME:_____

1. Find an equation that models the path of a satellite if its path is a hyperbola, $a = 51{,}000$ km and $c = 75{,}000$ km. Assume that the center of the hyperbola is the origin and the transverse axis is horizontal.

2. Solve the equation $x^2 - y^2 = 5$ for y. Graph each relation on a graphing calculator. Use the TRACE feature to locate the vertices.

3. Identify the center and intercepts of the hyperbola on the graphing calculator screen. Give the domain and range of the graph.



4. The equation of the hyperbola on which a ship is located is $x^2 - y^2 - 250y - 10{,}000 = 0$. Write the equation in standard form to find the vertex of the hyperbola.

5. Compare the quantity in Column A with the quantity in Column B.
The perimeter of a hyperbola's rectangle is 70 units. The vertices are $(-6, 0)$ and $(6, 0)$. The equation is $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$.

Column A	Column B
a	b

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The two quantities are equal.

[D] The relationship cannot be determined on the basis of the information supplied.

6. Compare the quantity in Column A with the quantity in Column B.
$x^2 - 4x + y^2 + 10y - 7 = 0$

Column A	Column B
x-coordinate of the center	y-coordinate of the center

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The two quantities are equal.

[D] The relationship cannot be determined on the basis of the information supplied.

[1] $\dfrac{x^2}{(2.601\times10^9)}-\dfrac{y^2}{(3.024\times10^9)}=1$

[2] $y=\pm\sqrt{x^2-5}$; vertices are $(-2.236,\ 0),\ (2.236,\ 0)$

[3] Center: (0, 0), x-intercepts: $(-2,\ 0),\ (2,\ 0)$, Domain: $\{x\in R,\ x\geq 2 \text{ or } x\leq -2\}$, Range: $\{y\in R\}$

[4] $\dfrac{x^2}{25{,}625}-\dfrac{(y+125)^2}{25{,}625}=1;\ (-160.08,\ 0),\ (160.08,\ 0)$

[5] B

[6] A