University of Guyana
Faculty of Technology

EMT 121 - Problem Set IX

April 13, 2011

1. Find the vertices , foci and asymptotes of $\frac{x^2}{25} - \frac{y^2}{49} = 1$ and sketch the graph.

2. Find the equation of the hyperbola with vertices $(\pm 5, 0)$ and foci $(\pm 3, 0)$.

3. Find an equation for the parabola that has its vertex at the origin and satisfies the given condition.

   (a) Focus (0,2)

   (b) Directrix $y = 6$.

4. Write the parabola in standard form and then graph(show the vertex, focus and directrix).

   (a) $x^2 + 6x = 4y - 1$

   (b) $y^2 + 4y = 8x - 4$

5. Give examples of situations in real life where parabolas, ellipses or hyperbolas occur.

6. Find the equation and the foci of the hyperbola with vertices $(0, \pm 2)$ and asymptotes $y = \pm 2x$. Sketch the graph.

7. Sketch the graph of:

   (a) $\frac{(x-3)^2}{25} - \frac{(y+1)^2}{49} = 1$

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