Name: _____

Student ID: _____

Math 4 – Exam 5
Thursday, October 11, 2012

INSTRUCTIONS
Calculators may NOT be used on this exam!

1. Be sure to print your name in the space provided at the top of this page.

2. Work all problems. Show all work. Full credit will only be given if work is show which **fully justifies** your answer.

3. There will be sufficient space under each problem in which to show your work. If you need additional space, use the back of the page the problem is on and indicate this fact.

4. Write the answer in the space provided.

5. Not including this page of instructions, this exam has 5 pages. There are 10 questions total. Point values are given in each problem. The total number of points is 100.

6. **Turn off your cell phone if you have one with you.**

7. Remove baseball caps or turn them around. Notes or textbooks cannot be used on this test.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

Page:	1	2	3	4	5	Total
Points:	24	12	20	26	18	100
Score:						

1. (12 points) Find the vertex, focus and directrix of the parabola given by $(y - 4)^2 = 12(x + 1)$. In which direction does the parabola open?
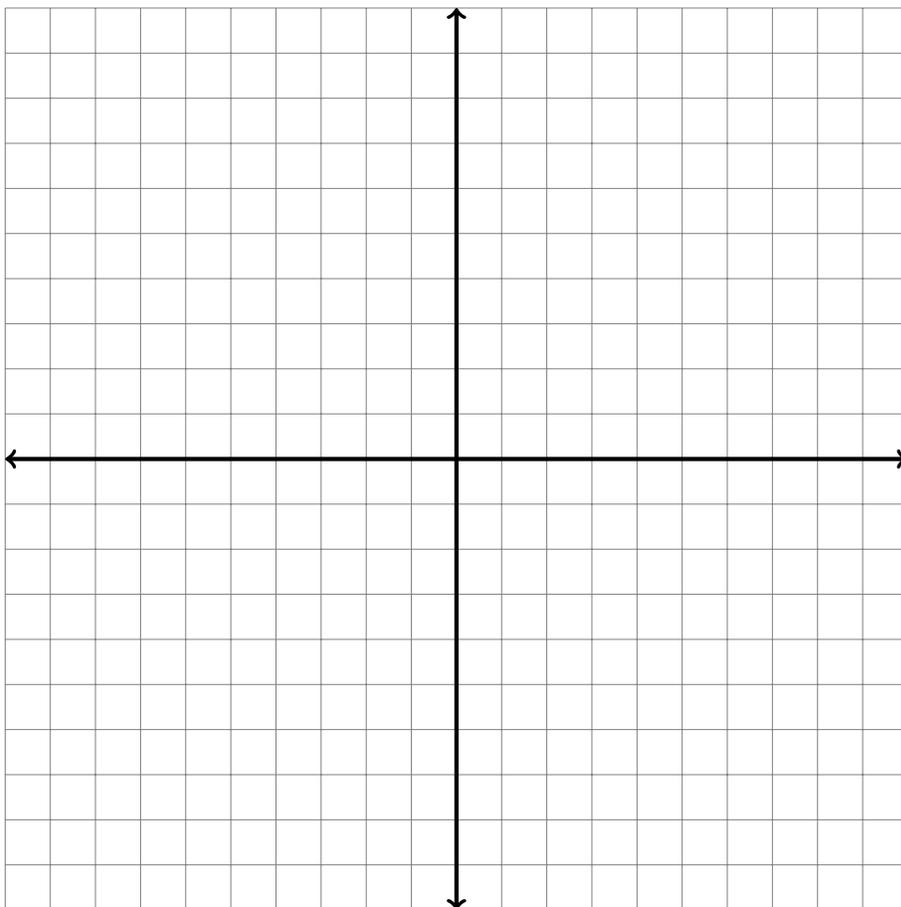
Vertex: _____

Focus: _____

Directrix: _____

Direction of opening: _____

2. (12 points) Find the equation of the ellipse with center $(-3, 1)$, one vertex at $(-3, 3)$, and one focus at $(-3, 0)$.

3. (12 points) Graph the hyperbola given by $\dfrac{(y-1)^2}{9} - \dfrac{(x+3)^2}{16} = 1$. Be sure to label any foci, vertices, asymptotes, and transverse axes.

4. (12 points) Find the shape, center, foci and vertices given by the equation

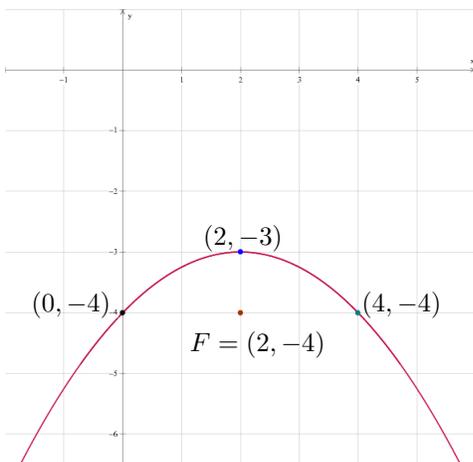$$9x^2 + 4y^2 - 18x + 16y - 11 = 0$$

Vertices: _____

Foci: _____

Center: _____

Shape: _____

5. (8 points) Find the equation of the parabola given by the following graph

$(2, -3)$

$(0, -4)$

$(4, -4)$

$F = (2, -4)$

6. (10 points) Solve the system of linear equations using any method. If it is inconsistent, say so.

$$\begin{cases} x + y - z = 6 \\ 2x - 2y + z = -5 \\ x + 3y - 2z = 14 \end{cases}$$

$x=$ _____

$y=$ _____

$z=$ _____

7. (8 points) Find the value of x **using Cramer's Rule**, given that

$$\begin{cases} \frac{1}{2}x + y = -2 \\ x - 2y = 8 \end{cases}$$

$x=$ _____

8. (8 points) A movie theater sells tickets for \$9.00 for adults and \$7.00 for senior citizens. On Monday, 325 people attended the theaters, resulting in a total amount of \$2,495 for the day. How many people were adults and how many were senior citizens?

Adults: _____

Senior Citizens: _____

9. (8 points) Find the inverse of the matrix

$$A = \begin{bmatrix} 1 & 0 & 2 \\ -1 & 2 & 3 \\ 1 & -1 & -2 \end{bmatrix}$$

$A^{-1}=$ _____

10. (10 points) Find AB if $A = \begin{bmatrix} -4 & -3 & 0 \\ 1 & 1 & -2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -4 \\ 1 & 5 \\ 2 & 2 \end{bmatrix}$.