Pre-Calculus Homework #10

1) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, and graph the equation $36y^2 - 64x + 388 = 576 - 216y - 16x^2$ including the locations of any vertices, centers, foci, directrices, major and minor axes, or axes of symmetry in your graph.
2) If the endpoints of a diameter of a circle are the points (–8, 9) and (6,–5), find the equation of the circle in standard form.
3) If the directrix of a conic section is $y = -7$ and a focus is at the point (–6, 3), what type of conic section is it and find the equation in standard form.
4) If the minor axis is 6, a vertex is at the point (–3,9), and another vertex is at the point (–3, –7), what type of conic is it and find the equation of the conic in standard form.
5) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, and graph the equation $-4x + 6y = y^2 - 11$ including the locations of any vertices, centers, foci, directrices, major and minor axes, or axes of symmetry in your graph.
6) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, asymptotes, and graph the equation $16x^2 + 18y + 55 = 9y^2 - 64x + 144$ including the locations of any vertices, centers, foci, directrices, major and minor axes, axes of symmetry, or asymptotes in your graph.
7) If a vertex of a conic section is the point (–4, –4), a focus is the point $(-4, 5 + \sqrt{145})$, and the asymptotes are $y = \frac{-9}{8}x + \frac{1}{2}$ and $y = \frac{9}{8}x + \frac{19}{2}$, what type of conic is it and find the equation of the conic in standard form.
8) Create a graph of the following equations and use it to approximate (rounded to one decimal place) the solutions graphically. Then solve the following system of equations algebraically to find approximate answers (rounded to one decimal place) and see how close your graphical answers are to the real answers.

$16x^2 - 96x - 25y^2 - 100y + 44 = 400$ and $36x^2 - 216x + 100y^2 + 424 = 3600 - 200y$

9) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, asymptotes, and graph the equation $36y^2 + 100x + 224 = 900 + 25x^2 - 216y$ including the locations of any vertices, centers, foci, directrices, major and minor axes, axes of symmetry, or asymptotes in your graph.

10) If a vertex of a conic section is the point (–9, –3), a focus is the point $(-4+\sqrt{106},-3)$, and the center is the point (–4, –3), what type of conic is it and find the equation of the conic in standard form.

11) Create a graph of the following equations and use it to approximate (rounded to one decimal place) the solutions graphically. Then solve the following system of equations algebraically to find approximate answers (rounded to one decimal place) and see how close your graphical answers are to the real answers.

$$64x^2+32y+692=1124-384x-16y^2 \quad \text{and} \quad -2x-2y=y^2-9$$

12) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, asymptotes, and graph the equation $4x^2-6y+7=y^2+16x+36$ including the locations of any vertices, centers, foci, directrices, major and minor axes, axes of symmetry, or asymptotes in your graph.

13) If a vertex of a conic section is the point (8, 14), a focus is the point $(8,5-\sqrt{65})$, and the center is the point (8, 5), what type of conic is it and find the equation of the conic in standard form.

14) Create a graph of the following equations and use it to approximate (rounded to one decimal place) the solutions graphically. Then solve the following system of equations algebraically to find approximate answers (rounded to one decimal place) and see how close your graphical answers are to the real answers.

$$50y-4x^2-11=100-24x-25y^2 \quad \text{and} \quad x^2+4y+13=36-y^2+6x$$

15) Identify the conic section, find the standard form of the equation of the conic, find any vertices, centers, foci, radii, directrices, major and minor axes, axes of symmetry, asymptotes, and graph the equation $y^2-36x-32=9x^2+4y+9$ including the locations of any vertices, centers, foci, directrices, major and minor axes, axes of symmetry, or asymptotes in your graph.

16) If a vertex of a conic section is the point (5, –12), a focus is the point $(5,-7+\sqrt{89})$, and the asymptotes are $y=\frac{5}{8}x-\frac{81}{8}$ and $y=\frac{-5}{8}x-\frac{31}{8}$, what type of conic is it and find the equation of the conic in standard form.

17) Create a graph of the following equations and use it to approximate (rounded to one decimal place) the solutions graphically. Then solve the following system of equations algebraically to find approximate answers (rounded to one decimal place) and see how close your graphical answers are to the real answers.

$$25y^2-96x-119=16x^2+50y+400 \quad \text{and} \quad 4y-9=8+x^2+6x$$

18) If a vertex of a conic section is the point (5, 8), a focus is the point $(-6-\sqrt{202},8)$, and the center is the point(–6, 8), what type of conic is it and find the equation of the conic in standard form.

19) Create a graph of the following equations and use it to approximate (rounded to one decimal place) the solutions graphically. Then solve the following system of equations algebraically to find approximate answers (rounded to one decimal place) and see how close your graphical answers are to the real answers.

$$36x+64y^2+292=576+256y-9x^2 \quad \text{and} \quad x^2-4y+5=25-y^2+2x$$

20) Identify the conic section and find its equation, in standard form, based on the following graph if point F is a focus at $(-3,4)$, point V at $(6,4)$ is a vertex, and point C is the center at $(2,4)$.