Conics Assessment

Name: _____

Date: _____ Block: _____

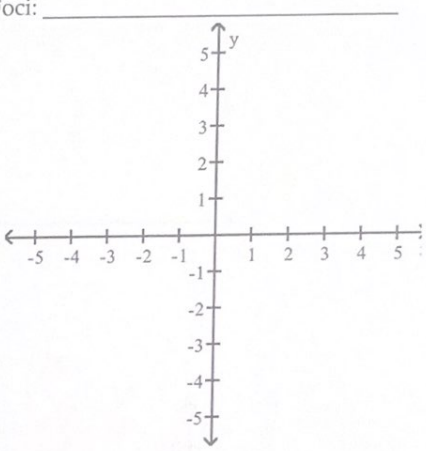
Scientific Calculator Allowed (NO Graphing Calculator)

Show all work. Correct answers without supporting work may not receive full credit.

Identify the center, vertices, and foci of the ellipse. Graph the conic.

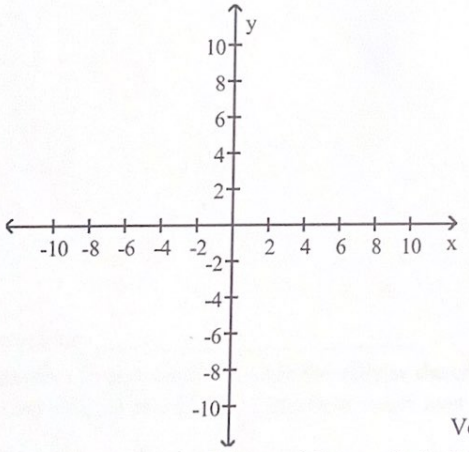
1) $\frac{(x+2)^2}{9} + \frac{(y+1)^2}{4} = 1$

Center: _____ Vertices: _____ Foci: _____



Identify the vertex, focus, and directrix of the parabola. Graph the conic.

2) $(y-3)^2 = 20(x-4)$



Vertex: _____ Focus: _____ Directrix: _____

Write the equation in standard form of the parabola. Identify the vertex, focus, and directrix.

3) $x^2 - 14x = 12y - 109$

Vertex: _____ Focus: _____ Directrix: _____

Find the center, vertices, foci, and asymptotes of the hyperbola.

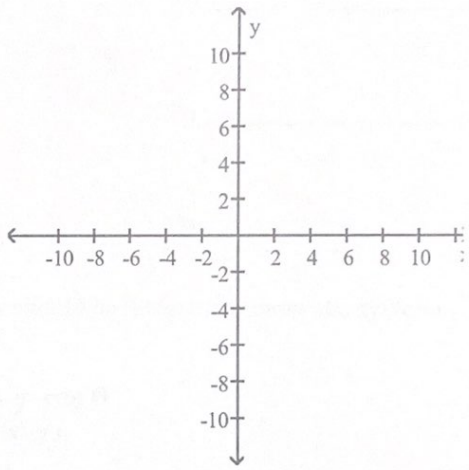
4) $x^2 - 9y^2 - 8x + 36y - 29 = 0$

center: _____ **vertices:** _____ **foci:** _____

equations of asymptotes: _____

Find an equation for the hyperbola described, then graph it.

5) center at (7, 9); focus at (5, 9); vertex at (6, 9)



equation: _____

Find an equation in standard form for the ellipse described.

6) Foci at (2, 4) and (2, –2); length of major axis is 10

equation: _____

Solve the problem.

7) A searchlight is shaped like a paraboloid of revolution. If the light source is located 3 feet from the base along the axis of symmetry and the opening is 8 feet across, how deep should the searchlight be? (You may leave your answer as an improper fraction)

depth: _____

Identify the type of conic without applying a rotation of axes.

8) $2x^2 + 6xy + 9y^2 + 4x - 2y + 9 = 0$

9) _____

9) $x^2 + 4xy + 4y^2 + 4x - 3y + 10 = 0$

10) _____

10) $2x^2 - 6xy + 4y^2 + 4x - 3y - 6 = 0$

11) _____

11) $3x^2 - 4xy + 2y^2 - 4x - 4y - 9 = 0$

12) _____

Use the equaton Cot $(2\theta) = \frac{A - C}{B}$ to find the angle (θ) through which the conic should be rotated to remove the xy-term.

Then use the equations

$$x = x' \cos \theta - y' \sin \theta \text{ and } y = x' \sin \theta + y' \cos \theta$$

to write the equations relating (x, y) with (x', y').

12) $10x^2 + 8\sqrt{3}xy + 2y^2 - 4 = 0$

$\theta =$ _____

$x =$ _____

$y =$ _____