Exam #4

November 20, 2017

Name _____

- You will be told when to begin the work and when to terminate work on the examination. You must stop when instructed. Points may be deducted in case of violations.

- Please show your work to support your answers that require calculations. Correct but unsupported answers may not be given full credit.

- The use of a cell phone or other electronic communication devices during the examination is not allowed. The exam will be canceled and a grade of "0" will be assigned to anyone who uses a cell phone during the examination or if one is found within hands reach.

- Calculators are not allowed on this exam.

- The exam consist of two parts. Part I contains four multiple choice questions worth 8 points each. Part II contains three open ended questions worth 26 points each if not stated otherwise.
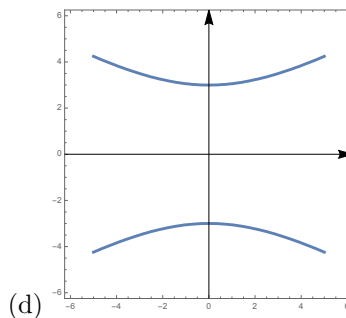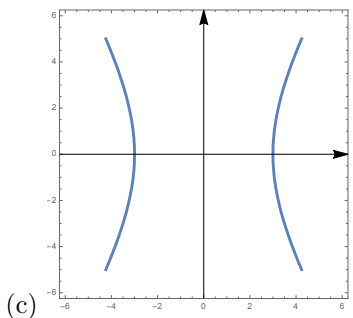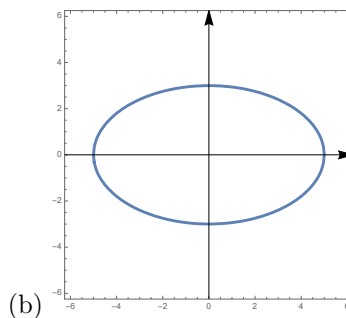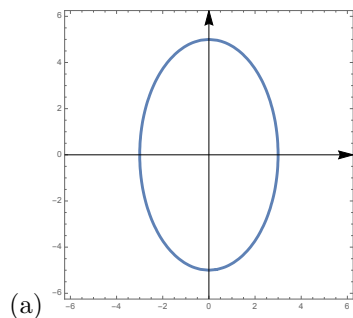
Part I

Choose your answer from five available choices. No partial credit will be given for wrong answers.

1. The equation $2x^2 - y^2 + 10x - y - 37 = 0$ describes which of the following?

    (a) Parabola

    (b) Ellipse

    (c) Straight line

    (d) Hyperbola

    (e) None of the above

2. Which of the following is the graph of the equation $\frac{x^2}{9} + \frac{y^2}{25} = 1$?

(a)

(b)

(c)

(d)

3. In the standard equation of an ellipse, the relationship between a, b, and c can be described by the following equation
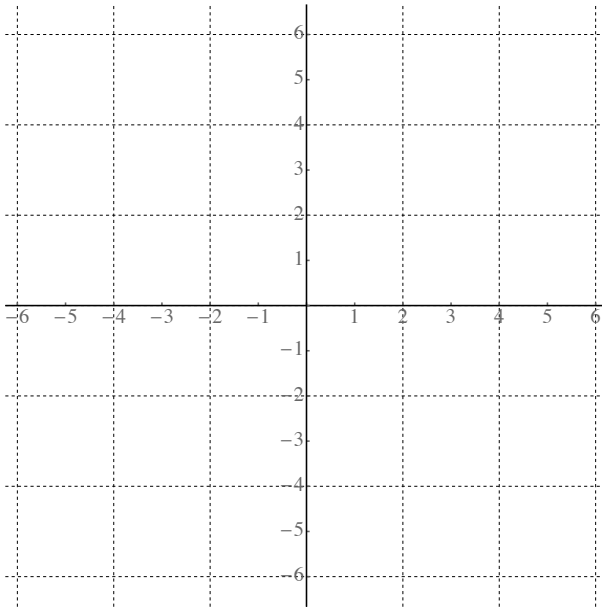
    (a) $c = a + b$

    (b) $c^2 = a^2 + b^2$

    (c) $c^2 = a^2 - b^2$

    (d) $c^2 = b^2 - a^2$

    (e) None of the above

4. A parabola has the vertex at $(1, -2)$ and the focus at $(1, 1)$. The equation of the directrix is
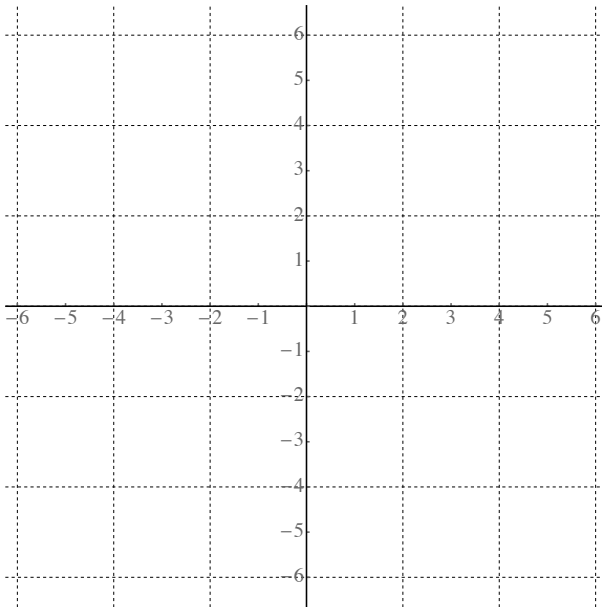
    (a) $y = 4$

    (b) $y = -5$

    (c) $x = 1$

    (d) $x = 0$

    (e) None of the above

Part II

5. Find the equation of the parabola with focus $(-2, 3)$ and the directrix $y = -1$. Graph the parabola.
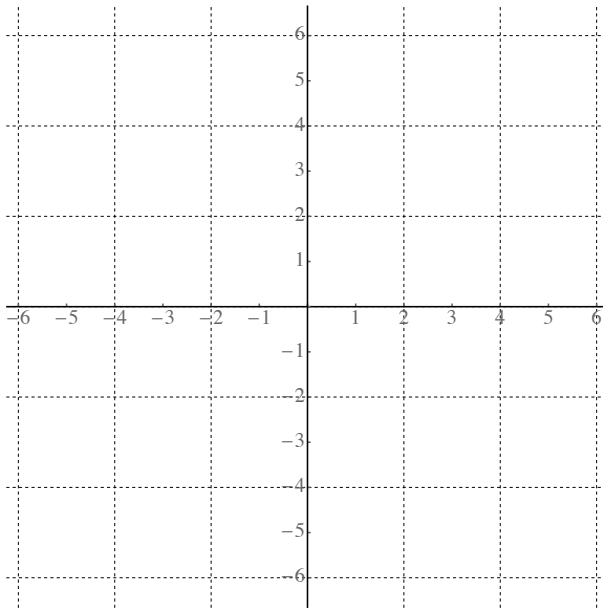
6. Graph the equation $\frac{x^2}{9} - \frac{y^2}{16} = 1$. Find the center, vertices, and foci. If it is a hyperbola give the equations of asymptotes.

7. Write the standard equation of the the conic given by the following equation:

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

Graph the equation and give coordinates of center, foci, vertices, directrix and asymptopes, if any.

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