MAC 1140, Fall 2017.

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.

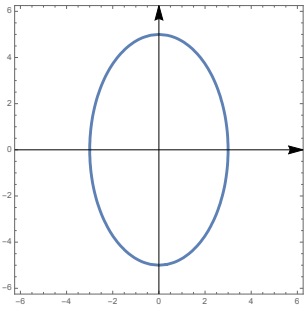
Part I

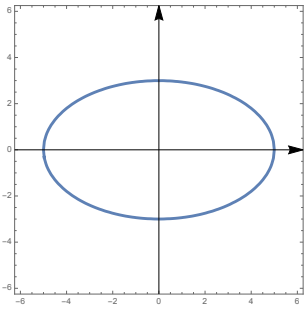
Choose your answer from five available choices. No partial credit will be given for wrong answers.

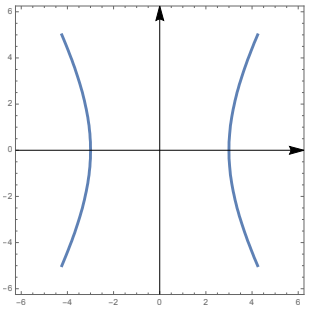
1. The equation $2x^2 + 10x - y - 37 = 0$ describes which of the following?

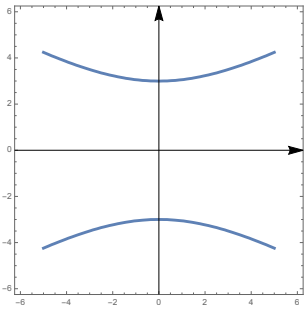
   (a) Parabola
   (b) Ellipse
   (c) Straight line
   (d) Hyperbola
   (e) None of the above

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

(a) 

(b) 

(c) 

(d) 

3. In the standard equation of an hyperbola, the relationship between a, b, and c can be described by the following equation

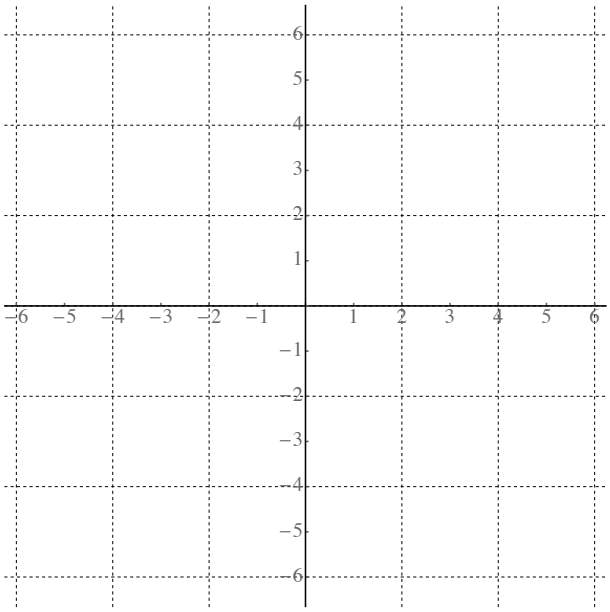
   (a) $c^2 = a^2 + b^2$
   (b) $c^2 = a^2 - b^2$
   (c) $c^2 = b^2 - a^2$
   (d) $c = a + b$
   (e) None of the above

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

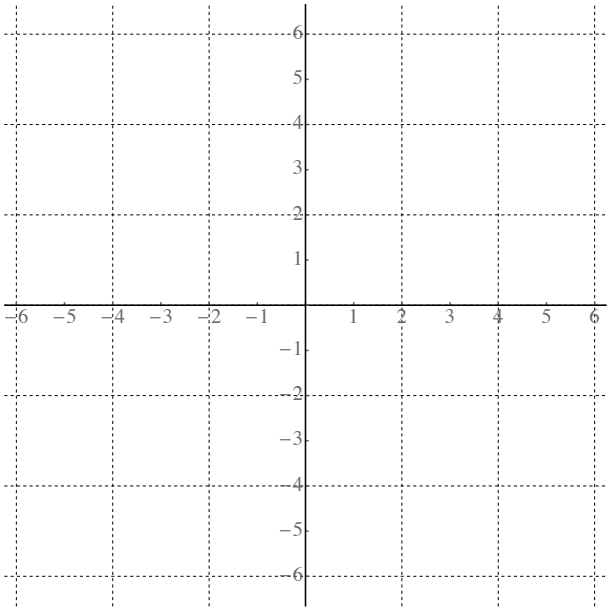
   (a) $x = 1$
   (b) $x = 0$
   (c) $y = 4$
   (d) $y = -5$
   (e) None of the above

Part II

5. Find the equation of the ellipse with vertices $(2, 6), (2, -4)$ and a focus $(2, 5)$. Graph the ellipse.



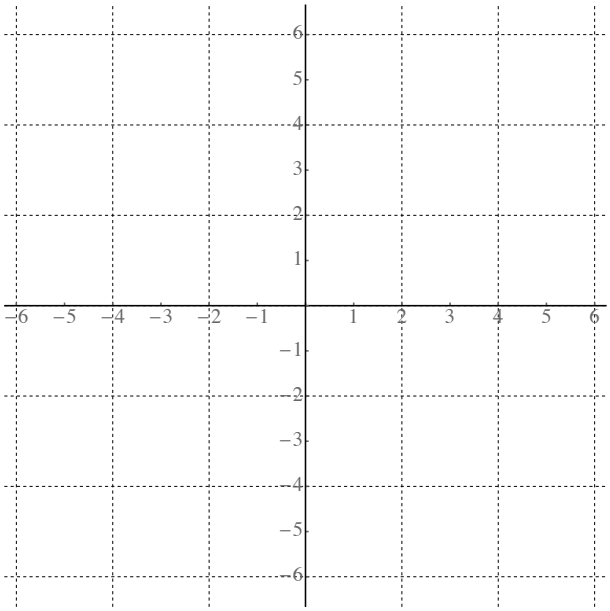
6. Graph the equation $\frac{x^2}{16} - \frac{y^2}{9} = 1$. Find the center, vertices, foci and asymptote, if any.



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

$$x^2 - 8y - 6x + 1 = 0.$$

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



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