

Math 1120F - Exam 3

Name: _____

Friday, November 21, 2014
Time: 30 minutes
Instructor: Brittany Cuchta

Instructions:

- Do not open the exam until I say you may.
- All cell phones and other electronic noisemaking devices must be turned off or completely silenced (i.e., not on vibrate) for the duration of the exam.
- **No calculators** are allowed on the exam.
- The exam *must* be taken in pencil. Using a pen on the exam will result in the loss of points.
- Failure to follow directions specific to a problem will result in the loss of points.
- Circle or box your final answer where appropriate. Put your final answer in the provided space when available. Failure to do so will result in points being deducted.
- Show **all** work. Full credit will only be given if work is shown which **fully and clearly** justifies your answer. I reserve the right to not grade a problem which I cannot read.
- Answers must be exact (like $\sqrt{2}$), not approximate (like 1.414), unless a problem specifically indicates otherwise.
- All final answers must be simplified unless otherwise specified. **Rationalization is not required unless otherwise specified.**
- If you run out of room, use the back of the page and indicate this on the question.
- As always, you are expected to exhibit academic integrity during the exam.

Page:	1	2	3	Total
Points:	21	16	13	50
Score:				

1. (8 points) Circle true or false for the following questions. Partial credit will not be given.
- (a) True False : If y varies directly with x then there exists a constant k such that $y = \frac{k}{x}$
 - (b) True False : The center of the circle $(x + 3)^2 + (y - 2)^2 = 5$ is $(3, -2)$.
 - (c) True False : Perpendicular lines have slopes that are reciprocals of one another.
 - (d) True False : If a graph is symmetric with respect to the x -axis then it cannot be symmetric with respect to the y -axis.
2. (8 points) Complete the following statements by filling in the blank with the correct answer. Note that partial credit will not be given.
- (a) If the graph of an equation is symmetric with respect to the origin and the point $(3, -4)$ is a point on the graph, then _____ is also a point on the graph.
 - (b) The lines $y = 2x + 5$ and $y = ax + 2$ are parallel if $a =$ _____.
 - (c) If x and y are two quantities, then y is directly proportional to x if there exists a constant k such that _____.
 - (d) The slope of a vertical line is _____.
3. (5 points) The current I in a circuit is inversely proportional to its resistance Z , measured in ohms. Suppose that when the current in a given circuit is 30 amperes the resistance is 8 ohms. Write an equation that describes the current in terms of resistance; be sure to clearly define any variables you use. Then, use this equation to find the current in the circuit when the resistance is 10 ohms.

Equation: _____

Solution: _____

4. (10 points) For the points $(-1, 2)$, $(1, 3)$, find (a) the distance between them; (b) their midpoint; (c) the equation of the line containing them; and (d) any intercepts of the line containing them.

Distance: _____

Midpoint: _____

Equation: _____

Intercepts: _____

5. (6 points) Test the following for any symmetry. Circle yes or no for each option. Failure to show clear, sufficient work will result in **no points** being awarded.

$$y = \frac{3x^3 + x}{x^2 + 1}$$

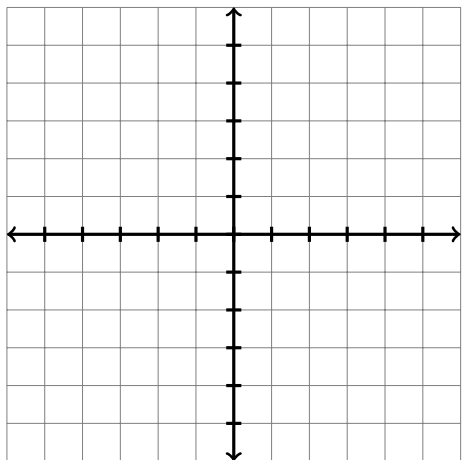
x -axis symmetry: Yes No

y -axis symmetry: Yes No

origin symmetry: Yes No

6. (8 points) Find the center, radius, and any intercepts of the following circle. Graph the equation. Clearly label the center.

$$x^2 - 2x + y^2 + 6y + 6 = 0$$



Center: _____

Radius: _____

Intercepts: _____

7. (5 points) Find the equation of the line perpendicular to $3x - y = -4$ containing the point $(-2, 4)$.

Equation: _____