Math 108 Exam #2
October 26, 2016

Time: 1 hour and 25 minutes
Instructions: Show all work for full credit. No outside materials or calculators allowed.
Extra Space: Use the backs of each sheet for extra space. Clearly label when doing so.

Name: _____

ID #: _____

Instructor/Section: _____

"I pledge by my honor that I have abided by the NJIT Academic Integrity Code."

_____ (Signature)

Problem(s)	Score	Total

1. Evaluate the following $f(x) = x^2 - 1$ and $g(x) = 3x + 5$. **(16 points)**:

a. $f(-3)$

b. $g(-2)$

c. $f(0)$

d. $g(5)$

2. Find the x and y intercepts of the following functions: **(6 points)**

a) $f(x) = x^2 - 5x + 6 = 0$

b) $h(x) = -2x + 10$

3. **(6 points)** Solve the equation(s).

a) $3x^2 = 10 - x$

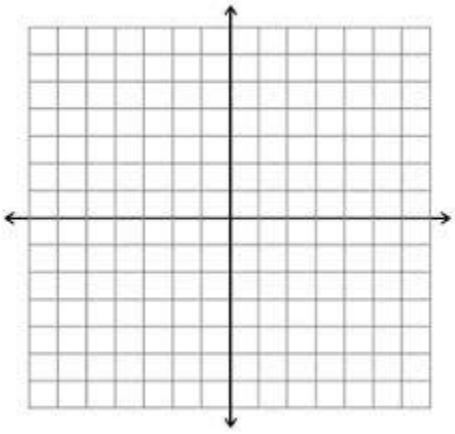
a._____

b) $x^2 - 2 = 4x$

b._____

4. Find the center and radius of the circle. Then graph on the coordinate plane below.

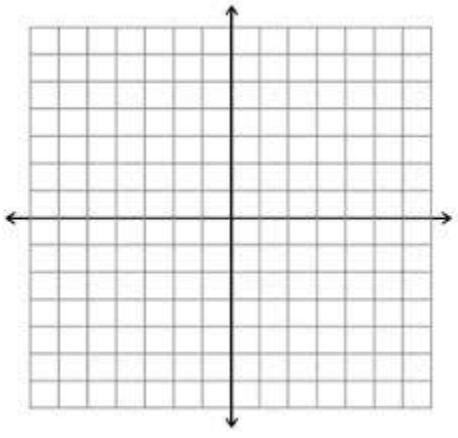
4. **(7 points)** $x^2 + y^2 - 2x + 2y - 4 = 0$



4)_____

5. **(10 points)** Show that N(-4,2), J(1,4), I(3,-1), T(-2,-3) are vertices of a square**.**

Hint: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$



5._____

5. **(6 points)** Given that A(-3,8), find the coordinates of point B such that C(5,-10) is the midpoint of segment AB.

6._____

7. **(6 points)** Solve the following equation(s).

a) $3+\sqrt{3x+1}=x$

a._____

b) $2|5x+2|-1=5$

b._____

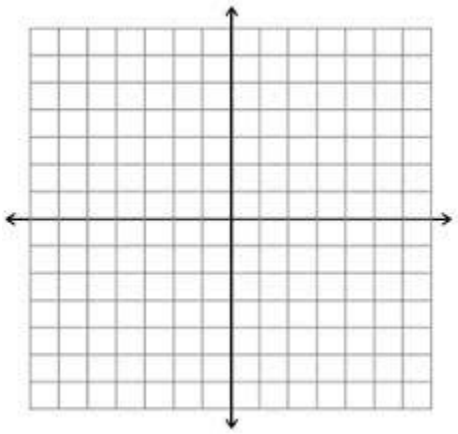
8. Solve the inequality $2x^2 - x < 3$, **for full credit you must show some analysis**. **(12 points)**

9. **(7 points)** Solve the inequality. Make sure your final answer is in interval notation. **You must show some analysis for full credit.**

$$\frac{x+1}{x+3} \leq 2$$

10. **(8 points)**

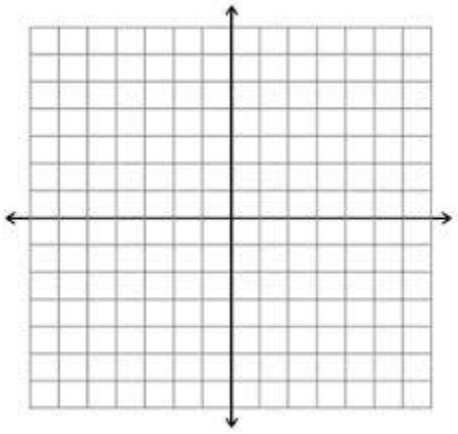
a) Sketch the graph of the equation. $y = -x^2 + 2$



b) Use test for symmetry to determine if the graph is symmetric with respect to the y-axis, x-axis, origin or no symmetry.

b._____

11. Graph the function. $R(x) = |x + 2|$. **(6 points)**



a) _____

b) Test the function for symmetry with respect to the x-axis, y-axis and the origin.

b) _____

c) Find the x and y intercepts if they exist

c)_____

12) Solve the following inequalities. Make sure your final answer is in interval notation. **(8 points)**

a) $2x+5<3x-7$

a)_____

b) $|3x-7|\geq 5$

b)_____

c) $3\leq \frac{2x-9}{5}<7$

c)_____

d) $|6x-5|\leq -2$

d)_____