Math 108 Exam #2
March 11, 2015

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: _____

Problem(s)	Score	Total

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

_____
(Signature)

1. Determine if the given value is a solution to the equation. If neither are solutions please state no solution. **(16 points)**:

a. $4x+7=9x-3$

i) $x=-2$

ii) $x=2$

b. $\frac{1}{x}-\frac{1}{x-4}=1$

i) $x=2$

ii) $x=4$

c. $\frac{x^{\frac{3}{2}}}{x-6}=x-8$

i) $x=4$

ii) $x=8$

d. $1-\left[2-\left(3-x\right)\right]=4x-\left(6+x\right)$

i) $x=2$

ii) $x=4$

2. Solve: **(8 points)**

a) $2y^2 + 7y = -3$

b) $x^2 - 6x - 11 = 0$

3. Evaluate the expression and write the result in the form of $a + bi$.**(8 points)**

a) $(2 - 5i) + (3 + 4i)$

a)_____

b. $(7 - 2i) - (-5 - 4i)$

b)_____

4. Solve the inequality. Express the solution using interval notation and graph the solution set on a number line. **(8 points)**

a) $6 - x \geq 2x + 9$

a)_____

b) $-1 < 2x - 5 < 7$

b) _____

5. Hooke's Law states that if a weight x is attached to a hanging spring, then the stretched length y of the spring is linearly related to x. For a particular spring we have $y = 0.3x + 2.5$ where y is measured in inches and x in pounds. **(6 points)**

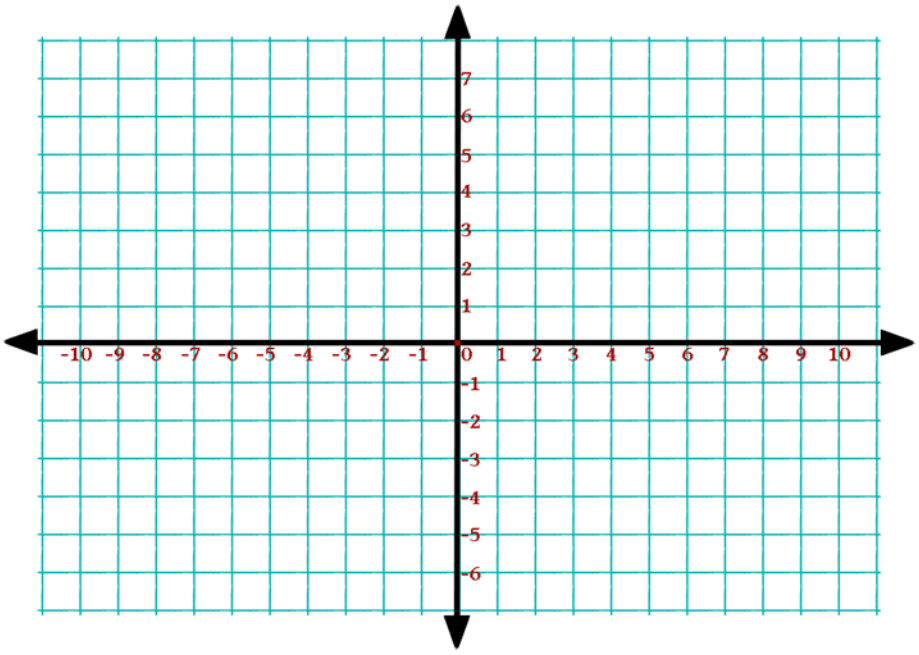
a) What do the slope and y-intercept in context of this problem?

a)_____slope is--_____y-intercept is _____

b) How long is the spring when a 5 lb weight is attached?

b)_____

6. Sketch the graph of the following equation. Identify the intercepts.
$2x-3y-12=0$ **(9 points)**



7. Solve the equation. **(12 points)**

a) $\frac{3}{x}+\frac{5}{x+2}=2$

a)_____

b) $2x=1-\sqrt{2-x}$

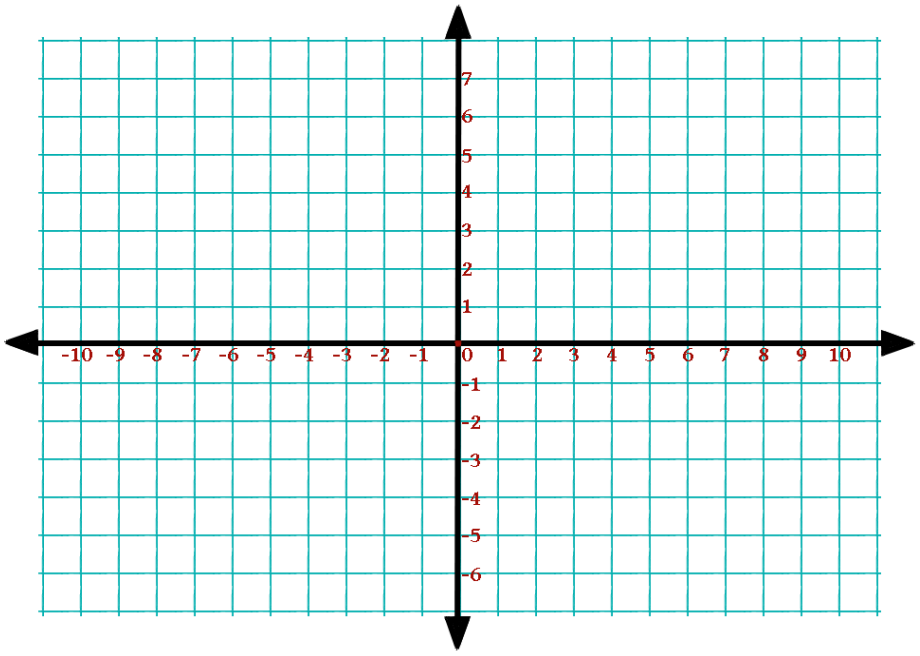
b)_____

8. Show the quadrilateral with vertices N(1,2), J(4,4), I(5,9), T(2,7) is a parallelogram by: **(10 points)**

a) Show that the lengths of opposite sides are equal

b) Show that the diagonals bisect each other

Note: You are NOT required to make a graph



9. Find the domain of the following functions. You must write your answer in interval notation: **(8 points)**

a. $f(x)=\dfrac{2x}{x^2-1}$

a)_____

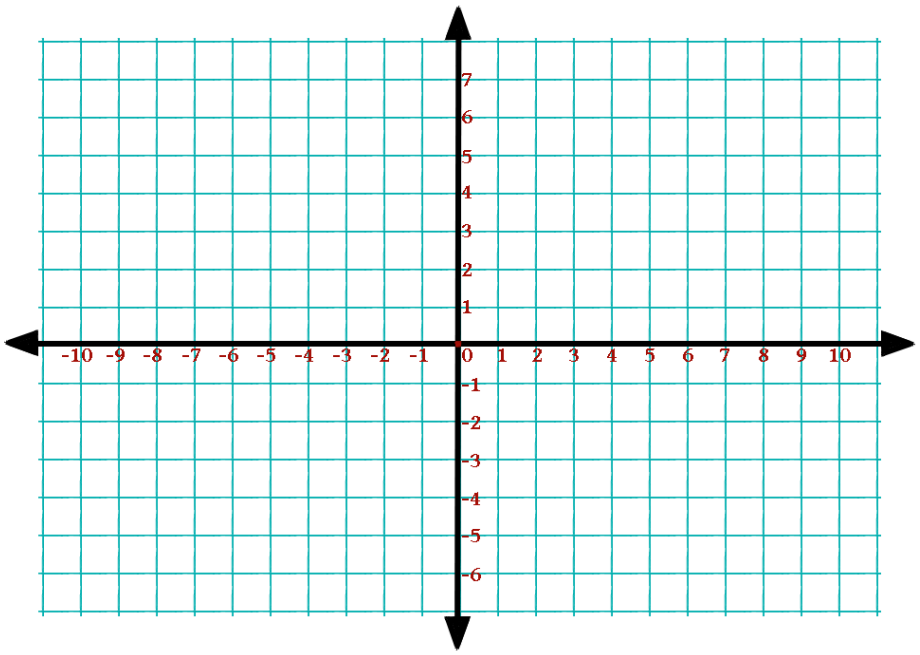
b. $h(x)=\dfrac{x-3}{x^2-4}$

b)_____

10. **(9 points)**

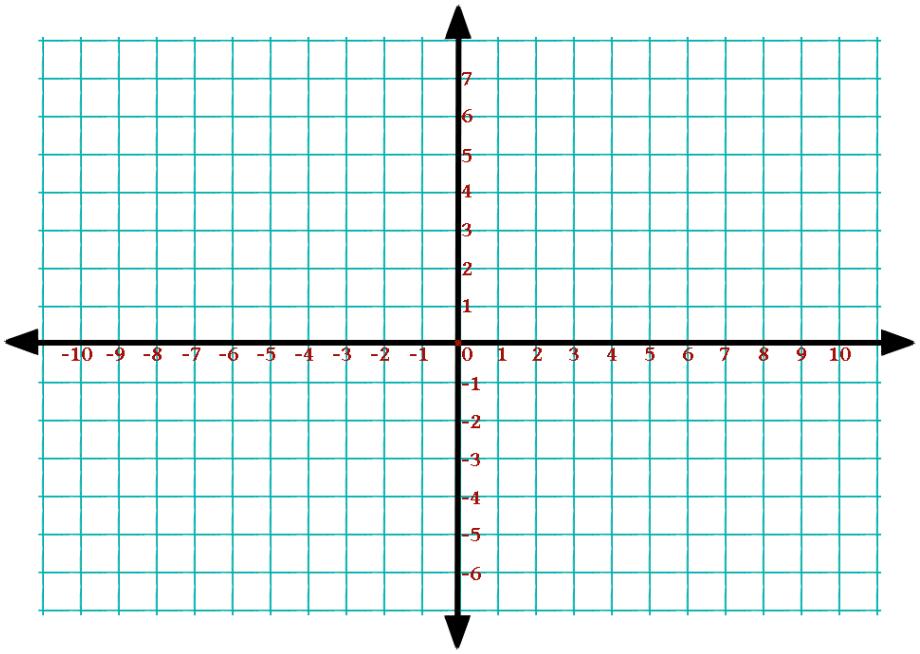
a) Solve the inequality. $\dfrac{(x-1)(x+3)}{x-2}<0$. **You must show some analysis to receive full credit**. **<u>You are NOT required to make a graph.</u>**

a)_____



11. Find the standard form of the equation of a circle that satisfies the given conditions. Center at (-1,1) and passes through the point (2,5) Then graph the circle.

(6 points)



11)_____