Math 107 Exam #1
February 19, 2014

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 **(12 points)**:

a. $\frac{5}{8}-\frac{5}{12}+\frac{1}{6}=$

b. $\frac{5x+1}{7x}-\frac{3x-2}{3x}$

Factor each polynomial:

c. x^3-27

d. $3x^2-5x+2$

2. Perform the indicated operation and simplify. Leave your result in factored form: **(16 points)**

a) $\dfrac{3}{x-2}+\dfrac{5}{2-x}$

b) $\dfrac{\dfrac{x^2-1}{x}}{\dfrac{(x-1)^2}{x}}$

c) $\left(\sqrt{7}-4\right)\left(\sqrt{7}+4\right)$

d) $32^{-3/5}$

3. If P dollars are invested at a simple interest rate r, the amount that will be available after t years is $A=P+\Pr t$. If \$100 was invested at a rate of 2%, how long will it be before you accumulate \$106? **(12 points)**

3)_____

4. Solve each equation:

a) $4x-(2x+3)=10x-9$ **(7 points)**

4a)_____

b. $\frac{3x}{8}-\frac{4x}{3}=4$ **(7 points)**

4b)_____

5. Simplify the expression. Leave you answer with only positive exponents. $\left(x^2y^{-1}\right)\left(\frac{x^{-4}z}{2y^{-2}}\right)^3$

(10 points)

5._____

6. a) Rationalize the denominator. Leave all radicals in simplest radical form:

$$\frac{5}{\sqrt{14}-2}$$ **(5 points)**

6a)_____

b) $$\frac{-\sqrt{12}}{\sqrt{32}}$$

6b)_____

7. Perform the operation and leave the result in simplest form: **(6 points)**

a. $$\frac{8x-36}{18x} \bullet \frac{12}{4x-18}$$

7a)_____

b. $$-\left(3x^5\right)^2$$

7b)_____

c. $$\left(\frac{b^{-2}}{a^{-2}}\right)\left(\frac{a}{b}\right)^2$$

7c)_____

8. Solve: **(9 points)**

a) $\dfrac{\dfrac{5}{12}}{\dfrac{15}{36}}$

8a)_____

b) Evaluate the expression for an exact solution: $\sqrt{72}$

8b)_____

c) Simplify fully, using positive exponents: $\dfrac{\left(16x^{0}y^{8}\right)^{-1/2}}{2x^{-2}y^{-5}}$

8c)_____

9. Find the product: $\left(\sqrt{7x}-\sqrt{8y}\right)\left(\sqrt{7x}+\sqrt{8y}\right)$ (4 points)

9)_____

10. Add and Simplify: $\sqrt{2x^{5}}-5\sqrt{32x}+\sqrt{18x^{3}}$

10)_____

11. Simplify: $\sqrt{6^2 - 11} \bullet \sqrt[3]{8}$

11)_____