Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## Exam 4

PLEASE READ ALL THE DIRECTIONS CAREFULLY

- Show all work. Solutions without proper work will receive no credit.
- Present work in a clear, organized manner.
- No notes, books, or calculators allowed.
- Write answers in <u>lowest terms</u> when appropriate
- Good Luck!



Problem	1	2	3	4	5	6	7	Bonus	Total
Score									
Possible								10	100

1. (18 points) Divide the polynomials. Use long division when applicable.

a. (5 points) 
$$\frac{8x^3y^2 - 9x^2y^3 + 5xy}{9xy^2}$$

b. (6 points) 
$$\frac{6x^2 + x - 6}{2x - 1}$$

c. (7 points) 
$$\frac{8x^3 + 27}{x+4}$$

- 2. (25 points) Factor the expressions.
  - a. (5 points)  $ad^2 + 10ad + 25a^2$

b. (5 points)  $15x^4y^2 + 24x^6y^6 - 32x^7y^3$ 

c. (7 points)  $4p^4 + 36p^3 + 32p^2$ 

d. (8 points)  $-2y^3 - 3y^2 - y$ 

- 3. (9 points) The base of a triangle is 6 inches greater than the height. The area is 20 square inches.
  - a. (3 points) Draw a diagram from the information provided.
  - b. (2 points) State the equation for the problem.
  - c. (4 points) Find the length of the triangle's base and height.

4. (14 points) Solve the equation for x

$$\frac{4}{x} - \frac{2}{x+1} = \frac{4}{3}$$

5. (26 points) Perform the indicated operation (multiply, divide, add, or subtract) for the rational expressions and write in lowest terms.

a. (5 points) 
$$\frac{x^2 - 8x + 15}{x^2 - 9x + 4} \cdot \frac{7 - x}{x^2 + 4x - 21}$$

b. (8 points) 
$$\frac{3x^2 + 11x + 6}{4x^2 + 16x + 7} \div \frac{9x^2 + 12x + 4}{2x^2 - x - 28}$$

c. (5 points) 
$$\frac{2x+1}{x^2-x-6} - \frac{x-1}{x^2-x-6}$$

d. (8 points) 
$$\frac{2x}{x^2+x-12} + \frac{3x}{x^2-9}$$

6. (8 points) Simplify the complex fraction.

$$\frac{\frac{x^2 - 9}{x}}{x - 3}$$

Bonus: Simplify the complex fraction.

$$\frac{\frac{1}{x} - \frac{1}{y}}{\frac{y}{x^2} - \frac{1}{y}}$$