

Name: _____

Student ID: _____

Instructor: _____

Class Hour: _____

Instructions:

- (1) Please fill in all the above information and write your name on the top of each of the 4 exam pages.
- (2) The point value on each problem appears to the left of the problem.
- (3) *You must show sufficient work to justify all answers.* Correct answers with inconsistent work may not be given credit.
- (4) No partial credit will be given on problems 1-3. Partial credit may be obtained on problems 4-9 provided sufficient work is shown.
- (5) Circle the letter of the correct answer in problems 1-3 and write the answers to problems 4-9 in the spaces provided.
- (6) No books or papers are allowed. Calculators may be used where appropriate.
- (7) The exam is self-explanatory. Please do *not* ask the instructors to interpret any of the exam questions.

Page	Points	Max Possible
1		24
2		28
3		22
4		26
Total		100

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Circle your answer for problems 1-3. You must show correct work to receive credit.

(8 pts) 1. Find the difference and express as a polynomial:

$$(3x^3 - x + 5) - (3x^2 - 9x - 8x^3 + 2)$$

A. $11x^3 - 3x^2 + 8x + 3$

B. $8x^3 + 8x + 3$

C. $5x^3 + 3x^2 + 10x - 7$

D. $11x^3 + 3x^2 - 10x + 7$

E. None of the above

(8 pts) 2. Simplify:

$$\frac{\frac{1}{a} - b}{\frac{1}{b} - a}$$

A. $\frac{(1 - ab)^2}{ab}$

B. 1

C. $\frac{b(1 - b)}{a(1 - a)}$

D. 0

E. $\frac{b}{a}$

(8 pts) 3. The area of a trapezoid is given by the formula $A = \frac{h(b + c)}{2}$.

Solve this formula for b.

A. $b = 2A - h - c$

B. $b = \frac{2A - c}{h}$

C. $b = \frac{hA + hc}{2}$

D. $b = \frac{h - 2Ac}{2A}$

E. $b = \frac{2A - hc}{h}$

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Place your answer in the space provided. You must show your work to receive credit.(9 pts) 4. Simplify completely. Eliminate negative exponents in your answer. ($x \neq 0, y \neq 0$)

$$\frac{(4x^2 y^2)(2y)^{-3}}{xy^{-4}}$$

(19 pts) 5. Factor each of the following as much as possible:

(10 pts) (a) $16x^6y - 81x^2y$

(9 pts) (b) $3x^3 + 6x^2 - 15x - 30$

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Place your answer in the space provided. You must show your work to receive credit.

(12 pts) 6. Divide and simplify completely. (Leave your answer in factored form.)

$$\frac{x^2 - 7x + 12}{2x^2 - 7x - 4} \div \frac{x - 5}{2x^2 - 5x - 3}$$

(10 pts) 7. Solve for x.

$$\frac{4}{x-1} - \frac{9}{x+1} = \frac{3x+2}{x^2-1}$$

 $x =$

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Place your answer in the space provided. You must show your work to receive credit.

- (14 pts) 8. The length of a rectangular garden is 5 feet longer than three times the width. If the owner plans to use 238 feet of fencing to enclose the garden, find the dimensions of the garden. (Draw and label a picture, set up an equation, and solve.)

Length =

Width =

- (12 pts) 9. A motorboat can maintain a constant speed of 16 miles per hour in still water. The boat makes a trip upstream to a certain point in $\frac{2}{5}$ of an hour and then travels back to the starting point downstream in $\frac{1}{4}$ of an hour. Find the rate of the current. Round your answer to the nearest tenth.
(Name a variable, set up an equation, and solve.)

Rate of current =

