

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

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

Instructor: \_\_\_\_\_

Class Hour: \_\_\_\_\_

## INSTRUCTIONS:

- (1) **There is no credit for guessing. You must show your work to receive credit!**
- (2) Please fill in all the above information and write your name on the top of each of the 4 exam pages.
- (3) The point value on each problem appears to the left of the problem.
- (4) You must show sufficient work to justify all answers. Correct answers with inconsistent work may not be given credit.
- (5) No partial credit will be given on problems 1-3. Partial credit may be obtained on problems 4-8 provided sufficient work is shown.
- (6) Circle the letter of the correct answer in problems 1-3, and write the answers to problems 4-8 in the space provided.
- (7) No books or paper are allowed. Calculators may be used where appropriate.
- (8) The exam is self-explanatory. Please do not ask the instructor to interpret any of the exam questions.

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

Formula:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  if  $ax^2 + bx + c = 0$

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

( 8 pts ) 1. Use the laws of exponents to simplify:  $x^{\frac{2}{3}} x^{\frac{1}{2}} =$

A.  $x^{\frac{3}{5}}$

B.  $x^{\frac{2}{6}}$

C.  $x^{\frac{1}{6}}$

D.  $x^{\frac{1}{3}}$

E.  $x^{\frac{7}{6}}$

( 8 pts ) 2. Find the function value  $v(-1)$  for  $v(t) = \frac{3t^3 - 2t^2}{t + 2}$ .

A. 1

B. -2

C.  $\frac{5}{3}$

D. -5

E.  $\frac{1}{3}$

( 8 pts ) 3. Divide:  $(6x^3 - 11x^2 + 12x - 2) \div (2x - 5) =$

A.  $3x^2 + 2x + 1 + \frac{3}{2x - 5}$

B.  $3x^2 + 2x + 11 + \frac{53}{2x - 5}$

C.  $3x^2 - 13x + 38 + \frac{5}{2x - 5}$

D.  $6x^2 + 5x + 12 + \frac{2}{2x - 5}$

E. *None of the above*

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

(24 pts) 4. Solve. Report radicals in simplest radical form. Do not use a calculator to approximate radicals.

(6 pts) a.  $\sqrt{5x-2} + 7 = 12$

x =

(6 pts)

b.  $x^2 - 5x + 4 = 0$

x =

(6 pts) c.  $-8x + x^2 + 13 = 0$

x =

(6 pts) d.  $\frac{2}{x} + \frac{x}{x+5} = \frac{25}{x^2 + 5x}$

x =

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

(12 pts ) 5. Perform the indicated operations and simplify.

(6 pts ) a. 
$$\frac{-3}{y+4} + \frac{4}{y-4} + \frac{y-5}{y^2-16}$$

(6 pts ) b. 
$$3 + \frac{x+2}{x-1}$$

(12 pts ) 6. Perform the indicated operations and simplify.

(6 pts ) a. 
$$\frac{y^2+8y+16}{y^2-16} \cdot \frac{y^2-2y-8}{y^2+9y+20}$$

(6 pts ) b. 
$$\frac{20x-8}{x^2-9} \div \frac{2-5x}{x+3}$$

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(14 pts )

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

7. A picture frame, with uniform width, measures 10 cm by 30 cm, and  $96 \text{ cm}^2$  of picture shows. Find the width of the frame. Draw a picture of the problem, name a variable, set up an equation and solve.

Width of frame =

(14 pts )

8. Train A travels 6 miles per hour slower than Train B. Train A travels 279 miles in the same time that Train B travels 306 miles. Find the speed of each train. Name a variable, set up an equation and solve.

Speed of Train A =

Speed of Train B =