

Student: _____
Date: _____

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Course: MAC1105 COLL ALGEBRA T R

8:00 AM 9:15 AM CHRISTOPHER

FOLEY 565314

Assignment: Chapter 1 Review

Complete for extra credit

1. Solve the polynomial equation by factoring and then using the zero-product principle.

$$50x - 25 = 2x^3 - x^2$$

What is the solution set?

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. { }
(Use a comma to separate answers as needed. Type an integer or a simplified fraction.)
- ☐ B. There is no solution.

2. Divide and express the result in standard form.

$$\frac{5i}{7-9i}$$

$$\frac{5i}{7-9i} = \boxed{}$$

(Simplify your answer. Type your answer in the form $a + bi$. Use integers or fractions for any numbers in the expression.)

3. You invested \$21,000 in two accounts paying 4% and 9% annual interest, respectively.
If the total interest earned for the year was \$1290, how much was invested at each rate?

The amount invested at 4% is \$.

The amount invested at 9% is \$.

4. Solve the equation with rational exponents.

$$(x-5)^{2/3} = 81$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is { }.
(Simplify your answer. Use a comma to separate answers as needed.)
- ☐ B. The solution set is the empty set.


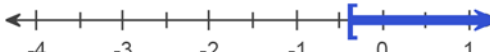
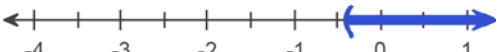


5. Other than \emptyset , use interval notation to express the solution set and graph the solution set on a number line.

$$10x - 12 \leq 2x - 15$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set in interval notation is _____.
(Simplify your answer. Use integers or fractions for any numbers in the expression.)
- ☐ B. The solution set is \emptyset .

Graph the solution set on a number line. Choose the correct graph below.

- ☐ A. 
- ☐ B. 
- ☐ C. 
- ☐ D. 
- ☐ E. The solution set is \emptyset .
- ☐ F. 

6.
$$\frac{2}{x} + 3 = \frac{4}{3x} + \frac{28}{9}$$

- a. Write the value or values of the variable that make a denominator zero. These are the restrictions on the variable.
- b. Keeping the restrictions in mind, solve the equation.

- a. The restrictions on the variable are $x \neq$.
- (Use a comma to separate answers as needed.)

- b. Solve the equation. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is $\{ \text{ } \}$.
(Simplify your answer. Use a comma to separate answers as needed.)
- ☐ B. There is no solution.

7. Multiply.

$$(2 + 9i)^2$$

$$(2 + 9i)^2 = \text{ } \text{ } \text{ }$$

(Type your answer in the form $a + bi$.)

8. Solve the equation by the method of your choice.

$$(4x + 3)(x + 2) = 3$$

The solution set is $\{ \text{ } \}$.

(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

9. Find all numbers for which the rational expression is undefined. If the rational expression is defined for all real numbers, so state.

$$\frac{x}{x+7}$$

Type the values for which the rational expression is undefined. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. _____ (Use a comma to separate answers as needed.)
- ☐ B. The rational expression is defined for all real numbers.

10. The following rational equation has denominators that contain variables. For this equation, **a.** Write the value or values of the variable that make a denominator zero. These are the restrictions on the variable. **b.** Keeping the restrictions in mind, solve the equation.

$$\frac{3x}{x+3} = 8 - \frac{9}{x+3}$$

- a.** What are the value or values of the variable that makes the denominators zero?

$x =$

(Simplify your answer. Use a comma to separate answers as needed.)

- b.** Solve the equation. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is { _____ }. (Simplify your answer.)
- ☐ B. There is no solution.

11. Subtract.

$$4i - (16 - 6i)$$

$$4i - (16 - 6i) =$$

(Simplify your answer. Type your answer in the form $a + bi$.)

12. Solve the equation by the square root property.

$$5(x+8)^2 = 60$$

The solution set is { }.

(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed. Simplify your answer.)

13. Solve the quadratic equation by completing the square.

$$x^2 - 18x - 2 = 0$$

The solution set is { }.

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed. Express complex numbers in terms of i .)

14. Use graphs to find the set.

$$(-\infty, -2) \cup [-5, 1)$$

Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A. The set is _____. (Type your answer in interval notation.)
- ☐ B. The answer is the empty set.

15. Find all values of x satisfying the following conditions.

$$y_1 = \frac{x-4}{5}, y_2 = \frac{x-11}{6}, \text{ and } y_1 - y_2 = 1.$$

Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A. The solution set is {_____}. (Simplify your answer.)
- ☐ B. There are no solutions.

16. Compute the discriminant. Then determine the number and type of solutions of the given equation.

$$x^2 - 6x - 6 = 0$$

What is the discriminant?

(Simplify your answer.)

Choose the sentence that describes the number and type of solutions of the quadratic equation.

- ☐ A. There are an infinite number of real solutions.
- ☐ B. There are two imaginary solutions.
- ☐ C. There is one real solution.
- ☐ D. There are two unequal real solutions.

17. Solve the absolute value inequality.

$$|2x - 4| > 10$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is _____. (Type your answer in interval notation.)
- ☐ B. The solution set is the empty set.

18. Solve the absolute value equation or indicate that the equation has no solution.

$$3\left|7 - \frac{7}{4}x\right| + 11 = 32$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is {_____}.
(Use a comma to separate answers as needed. Type an integer or a fraction.)
- ☐ B. There is no solution.

19. Suppose the average yearly salary of an individual whose final degree is a master's is \$50 thousand less than twice that of an individual whose final degree is a bachelor's. Combined, two people with each of these educational attainments earn \$124 thousand. Find the average yearly salary of an individual with each of these final degrees.

The average yearly salary for an individual whose final degree is a bachelor's is \$ thousand and the average yearly salary for an individual whose final degree is a master's is \$ thousand.

20. The length of a new rectangular playing field is 7 yards longer than double the width. If the perimeter of the rectangular playing field is 350 yards, what are its dimensions?

The width is yards.

The length is yards.

21. Solve the equation by making an appropriate substitution.

$$36x^4 = 85x^2 - 49$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is $\{ \quad \}$.
(Simplify your answer. Use a comma to separate answers as needed.)
- ☐ B. The solution set is the empty set.

22. Solve the radical equation. Check all proposed solutions.

$$x - \sqrt{3x - 11} = 7$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is $\{ \quad \}$. (Use a comma to separate answers as needed.)
- ☐ B. There is no solution.

23. Solve the equation. Be sure to check your proposed solution by substituting it for the variable in the original equation.

$$5x - (3x - 3) = 9$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The solution set is $\{ \quad \}$.
- ☐ B. The solution set is all real numbers.
- ☐ C. There is no solution.

24. Solve the formula for n.

$$A = W + nm$$

n =

25. Multiply the following rational expressions.

$$\frac{x^2 + 12x + 36}{x^3 + 216} \cdot \frac{2}{x + 6}$$

Select the correct choice below and fill in the answer box to complete your choice.
(Simplify your answer.)

☐ A. $\frac{x^2 + 12x + 36}{x^3 + 216} \cdot \frac{2}{x + 6} =$ _____, $x \neq -216$

☐ B. $\frac{x^2 + 12x + 36}{x^3 + 216} \cdot \frac{2}{x + 6} =$ _____, $x \neq -6$

26. Solve the following equation using the quadratic formula.

$$2x^2 - 15x - 1 = 0$$

The solution set is { _____ }.

(Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

27. Solve the compound inequality.

$$-1 \leq \frac{2}{3}x + 3 < 5$$

Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

☐ A. The solution set in interval notation is _____.

☐ B. The solution set is \emptyset .

28. Solve the equation by factoring.

$$9x^2 + 21x - 8 = 0$$

The solution set is { _____ }.

(Use a comma to separate answers as needed.)

29. Solve the absolute value inequality.

$$\left| \frac{3x + 6}{3} \right| < 3$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

☐ A. The solution set in interval notation is _____.

☐ B. The solution set is \emptyset .

30. Perform the indicated operations and write the result in standard form.

$$(-8 - \sqrt{-5})^2$$

$$(-8 - \sqrt{-5})^2 = \boxed{}$$

(Type an exact answer, using radicals as needed. Type your answer in the form $a + bi$.)

31. Find all numbers that must be excluded from the domain of the rational expression.

$$\frac{x - 5}{x^2 + 5x + 4}$$

Type the values for which the rational expression is undefined. Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A. (Use a comma to separate answers as needed.)
- ☐ B. The rational expression is defined for all real numbers.

32. Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression in order for it to be equivalent to the original expression.

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

Simplify the rational expression. Select the correct choice below and fill in any answer boxes in your choice.

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

(Simplify your answer. Use positive exponents only. Use integers or fractions for any numbers in the expression.)

Find the numbers that must be excluded from the domain of the simplified rational expression in order for it to be equivalent to the original expression. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. $x \neq$ (Use a comma to separate answers as needed.)
- ☐ B. There are no numbers excluded from the domain.

33. After a 75% reduction, you purchase a new washing machine on sale for \$170. What was the original price of the washing machine?

The original price was \$.

34. Find the product.

$$(4 - 7i)(5 - 3i)$$

$$(4 - 7i)(5 - 3i) = \boxed{}$$

(Simplify your answer. Type your answer in the form $a + bi$.)