Name:

MAC1105 Section 1A26
Exam 1 Review (NOT FOR A GRADE)

Please show all of your work in a NEAT and ORGANIZED fashion.

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1. Let set $A = \{-\frac{9}{4}, -\sqrt{3}, 0, \sqrt{4}, 2.41, 40\}$. List all the elements of A that belong to (a) the integers and (b) the rational numbers.

2. Evaluate the expression.

$$(4 + 2(-3^2)) \div 2$$

3. Identify the property illustrated in the statement: For any real numbers x and y, $3x + 4y = 4y + 3x$.

4. Find the value of the given expression if $x = -2$ and $y = 3$:

$$|-5x - 10y|$$

5. Simplify the expression.

$$(-2x^3y^0)^4(\frac{1}{8}y^5)$$

6. Determine whether the following expressions are polynomials. If they are polynomials, determine the degree and leading coefficient.

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

(b) $x^3 + 4x^5 - 3x - 6$

(c) 3

7. Add.

$$(x^3 - 2x^2 + 6x - 1) + 4(2x^3 - x + 5)$$

8. Find the product.

$$(3x - 5)^2$$

9. Factor the following polynomials **completely**, if possible. If not possible, state that the polynomial is prime.

(a) $12xy + 8y - 3x - 2$

(b) $x^2 + 7x - 6$

(c) $15x^2 - 13x + 2$

(d) $16x^2 + 48x + 36$

10. Find the domain of the rational expression.

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

11. Write the rational expression in lowest terms. Include the domain.

$$\frac{4x+12}{x^2-3x-18}$$

12. Find the quotient. Write the domain of the rational expression.

$$\frac{3x^2+11x-4}{x^2+3x-4} \div \frac{3x^2+2x-1}{x+1}$$

13. Add the rational expressions. Write the domain.

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

14. Simplify the expression. Write the domain.

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