## Polynomials:  Operations and Classifying

**Part 1:** Classify each as **M** (monomial), **B** (binomial), **T** (trinomial), **P** (polynomial), or **C** (constant).

1)._____ $5x^3 + 2x - 1$

2)._____ $89$

3)._____ $2x^{12}$

4)._____ $5x - 10$

5)._____ $8x^4 - 7x^3 + 2x - 19$

6)._____ $43x^8 - 14x^5$

**Part 2: Standard Form of Polynomials**
7.) Circle the problems that are in **standard form**. If it is not in standard form, re-write in standard form.

a. $x^3 - 11x^2$

b. $2 + 3x + 4x^2 + 3x^3$

c. $3x + 17x^4 + 2x^2$

d. $1 + 3x + 2x^2$

_____    _____        _____        _____

8.)   Given:  $2x^3 - 5x^2 - 2x + 12$

How many terms are there? ____

What is the leading term? ____

What is the coefficient of the $3^{rd}$ term? ____

What is the leading coefficient? ____

What is the constant? _____

What is the degree? ____

9.)   Given:  $6x^7 + 3x^5 - 1$

How many terms are there? ____

What is the leading term? ____

What is the coefficient of the $3^{rd}$ term? ____

What is the leading coefficient? ____

What is the constant? _____

What is the degree? ____

**Part 3:**  Identify whether the following are examples of polynomials.  If not, explain.
10.) $5x^{-2} + 1$

11.) $2x^3 - 5x^2 - 2x + 12$

12.) $5x^4 + 9t^8 + 4z - 8$

13.) $3x^{\frac{1}{2}} + 2$

**Part 4:** Perform the indicated operations

14.) $4(x^2 - 3) + x(x + 1) =$

15.) $(4x + 3)(x - 7) =$

16.) $(3x - 1)(2x^2 - 5x + 1) =$

17.) $(2x - 13x^2 + 3) - (2x^2 + 8x) =$

18.) $(x - 9)(x + 9) =$

19.) The width of a rectangular painting is three inches more than twice the height. A frame that is 2.5 inches wide goes around the painting.

a. Write an expression for the area of the painting.

b. Write an expression for the combined area of the painting and frame.

c. What is the area of the frame?