

HM3 Polynomial operations

**Section 1- Simplifying Polynomials. Combine ALL like terms by adding/subtracting or multiplying**

7.)  $(19x^2 + 12x + 12) + (7x^2 + 10x + 13)$

8.)  $(4x^2 - 6x + 7) + (-19x^2 - 15x - 18)$

9.)  $(20x^2 + 15x + 13) + (-19x^2 + 17x + 5)$

10.)  $(9x^6 - 4x^5) + (10x^5 - 15x^4 + 14)$

11.)  $(19x^2 + 9x + 16) - (5x^2 + 12x + 7)$

12.)  $(17x^2 + 7x - 14) - (-6x^2 - 5x - 18)$

13.)  $3x^2(4x^3 - 5x + 10)$

14.)  $3x(-x^2 + 2x - 12)$

15)  $(x - 7)(x - 6)$

16)  $(3x - 1)(x + 5)$

17)  $(x + 5)(x^2 - 6x + 3)$

18.)  $(2x - 3)(4x^2 + 8x - 2)$

**Section 2 – Factor Out the Greatest Common Factor.**

**Example:**  $12a^3b + 15ab^3 = 3ab(4a^2 + 5b^2)$

1.  $2x^2 + 8x$

2.  $10x^2y - 15xy^2$

3.  $12x^2 - 9x + 15$

4.  $3n^3 - 12n^2 - 30n$

**Section 3 – Factoring Trinomials –  $x^2 + bx + c$**

**Example:**  $x^2 + 7x + 10 = (x + 2)(x + 5)$

1.  $x^2 - 10x + 16$

2.  $y^2 - 7y - 8$

3.  $x^2 - 14x + 24$

4.  $x^2 - 11xy - 60y^2$

**Section 4 – Factoring the Difference of Perfect Squares :  $a^2 - b^2 = (a - b)(a + b)$**

**Examples:**  $x^2 - 4 = (x - 2)(x + 2)$

$4x^2 - 1 = (2x - 1)(2x + 1)$

1.  $x^2 - 1$

2.  $x^2 - 9$

3.  $9y^2 - 16$

4.  $16x^4 - y^2$