

6.1 Polynomial Operations

Date _____ Period _____

CLASSIFY POLYNOMIALS.**Degree: 0 - constant (there will be no variable in this expression); 1 - linear; 2 - quadratic; 3 - cubic; 4 - quartic; 5 - quintic; 6 or higher - nth degree****Number of Terms: 1 - monomial; 2 - binomial; 3 - trinomial; 4 or more - multinomial****Directions: Name each polynomial by degree and number of terms.**

1) $5x^5 + 4x^4$

2) $9x^4$

3) $-4p^3 + 9p$

4) $-7n - 3n^2$

5) -2

6) $-v^2 + 7v$

ADDING POLYNOMIALS.**Steps: Combine the like terms. Remember add the coefficients and keep the variables/exponents the same.****Directions: Simplify each sum. Write your final answer in standard form.**

7) $(5n^4 + 2n^2 - 5n^3) + (4n^2 - 2n^3)$

8) $(8a^4 + 4a^3 + 7a) + (3a^3 + 7a)$

9) $(a + 3 - 2a^3) + (3 - 8a^2 + 8a)$

10) $(5 - 8r^4 - r^3) + (6 - 5r^2 + 8r^4 - 4r^3)$

SUBTRACTING POLYNOMIALS.

Steps: Change the sign(s) of all terms in the second polynomial. Then combine like terms. Remember add the coefficients and keep the variables/exponents the same.

Directions: Simplify each difference. Write your final answer in standard form.

11) $(8r^3 - 4 - 4r) - (2r^3 - 4r)$

12) $(7x^2 - 3 + 6x^3) - (6x^3 - 2)$

13) $(k^3 + 5 + k) - (5 - 5k - k^3)$

14) $(3 + 7v^4 + 4v) - (1 + 3v - 8v^4 - 3v^2)$

MULTIPLYING POLYNOMIALS.

Steps: Distribute every term of the first polynomial to every term in the second polynomial. You could also use box method when multiplying. Watch your signs.

Directions: Find each product. Write your final answer in standard form.

15) $5(-2p^2 - p + 5)$

16) $(-p - 8)(-p + 7)$

17) $(5n - 2)(-7n^2 + 3n + 7)$

18) $(4x^2 - 5x + 5)(-7x^2 - 2x + 4)$

DIVIDING POLYNOMIALS.

Case 1: Dividing by a polynomial by a monomial - divide each term in the first polynomial by the monomial. Remember the rules of exponents, when dividing powers with the same base, subtract their exponents. Sometimes, when doing this process the result is NOT a polynomial function.

Directions: Divide. Your answer should only have positive exponents.

19) $(32v^3 + 4v^2 + 8v) \div 8v^2$

20) $(3k^5 + k^4 + 20k^3) \div 10k$

21) $(2k^3 + 36k^2 + 27k) \div 9k^2$

22) $(18b^3 + 5b^2 + 9b) \div 9b^2$