Algebra 2
Mr. Doherty

Name:_____
Date:_____

5.1-5.6 Practice Test

1. Simplify the following expressions.

a) $(15n^2 - 6nk + 9k^2) + (3n^2 - 14nk)$ b) $(15n^2 - 6nk + 9k^2) - (3n^2 - 14nk)$

c) $(7a - 6)(7a + 6)$

d) $\left(\dfrac{j^{10}k^{-3}n^0}{j^{-6}k} \right)^2$

e) $(3r - 5)^3$

2. Write the answer in scientific notation.

$(9.2 \times 10^6)(4.7 \times 10^8)$

3. What is the value of 3.2×10^{-3} ?

4. Answer the following about the polynomial $f(x) = 4x - 3x^2 + 2x^5 + 11$

a) What is the standard form of f ?_____

b) What is the degree of f ?_____

c) What is the leading coefficient?_____

d) What is the end behavior of $f(x)$?

5. Factor the following completely and find the zeros of each function

a) $3x^3 + 2x^2 - 12x - 8$

b) $4a^4 + 8a^3 - 60a^2$

6. List all of the solutions to the following equation: $(5x + 6)(x - 3)(x + 1) = 0$

7.   Divide $x^4 - 3x^3 + 7x - 4$ by $x^2 - 2x + 2$ using long division.

8.   Factor the polynomial $f(x) = x^3 + 7x^2 + 7x - 15$ completely, given that $(x+5)$ is a factor. What are the zeros of $f(x)$?

9.   Factor the polynomial $g(x) = x^3 + 8x^2 + 4x - 48$ completely, given that $x = -6$ is a zero. What are all of the x-intercepts of $g(x)$

10.   What is true about the degree and leading coefficient of the polynomial function whose graph is shown below?
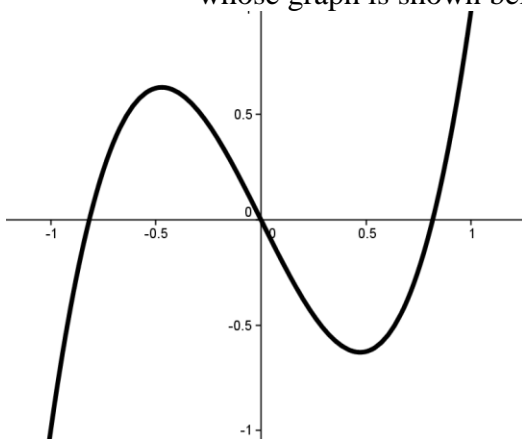
A.)   Degree is even, leading coefficient is negative.

B.)   Degree is even, leading coefficient is positive.

C.)   Degree is odd, leading coefficient is negative.

D.)   Degree is odd, leading coefficient is positive.

11. If $h(x) = 4x^4 - 2x + 7$, what is the value of $h(3)$?

12. A cube is a 3-dimensional object where its volume is found by multiplying the height, length, and width together. If a particular cube has a height, widht, and length that are all $(3x - 1)$ feet. Find a polynomial that represents the volume of the cube written in standard form. What would the volume of the cube be if $x = 2$?

13. Divide the following polynomials and write the solution below.

$$\frac{4x^4 - 2x^2 + 5}{x + 1} = \underline{\hspace{4cm}}$$

14. Find all of the zeros of the following polynomial.

$$g(x) = 2x^4 + 3x^3 - 6x^2 - 6x + 4$$