Algebra II Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapter 6 Test Review Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hour\_\_\_\_

\*\*\*\* For more practice, look at the Chapter Review in the book on pages 353-354\*\*\*

(ALL the answers are in the back of the book)

In problems 1 – 3, write each polynomial in STANDARD form. Then classify it by degree AND by the number of terms.

1) 3x2 – 7x4 + 9 – x4 1)

Standard Form:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Degree:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Number of Terms:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Standard Form:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Degree:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Number of Terms:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) 8x5 + 7x2 – 3x5 2)

3) 3x3(-5x2 + 2x) 3)

Standard Form:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Degree:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Number of Terms:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Write the expression (x + 2)(x – 8) as a polynomial in standard form.

 4) Standard Form:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**In 5 and 6, write a polynomial function in Factored form with the given zeros.**

5) *x* = 1, -2, 4 5) Factored Form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) *x* = 0, 3 mult 2 6) Factored Form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**In 7 and 8, write a polynomial function Standard form with the given zeros.**

5) *x* = 2, 3, -4 5) Standard Form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) *x* = 0, 2 mult 2 6) Standard Form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In 7 – 10, find the zeros of each function and state the multiplicity.

7) y = x(x + 4)(x – 8) 7)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) f(x) = (x – 9)(x + 7)2(x – 5) 8)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) y = x2 + x – 2 9)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) g(x) = x4 + 3x3 + 2x2 10)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) Sara is designing shipping boxes that are rectangular prisms. One shape of the box with height **h** in feet, has a volume defined by the function V(h) = h(h – 6)(h – 9). **Graph the function.** What is the **maximum volume** for the domain 0 < h < 9? Round to the nearest cubic foot.

 11) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12) Write the polynomial in factored form. 2x3 + 12x2 – 32x. (Remember to factor GCF)

 12) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Divide using synthetic division.

13) (x2 + 3x – 4) $÷$ (x – 1) 13) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) Use synthetic division to find P(2) = x4 + 3x3 – 6x2 – 10x + 8

 14)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) Given that p(x) is a polynomial and p(-10) = 0, give a factor of p(x)?

 15) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) Given that p(x) is a polynomial and p(8) = 0, give a factor of p(x)?

 16) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17) Factor x3 + 64 17)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18) Factor x3 - 216 18) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19) Factor x4 + 2x2 - 8 19)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20) Find all Complex Roots for the given polynomial$h\left(x\right)=x^{3}-6x^{2}+10x-8$: x3 – 2x2 – 3x + 6 = 0.

21) Find all Complex Roots for the given the polynomial: x3 – 5x2 + 5x – 4 = 0

22) Use the Rational Root Theorem to list all possible rational roots of the polynomial equation

 x3 + x2 – 7x – 6 = 0. Do not find the actual roots.

 22) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23) Use the Rational Root Theorem to list all possible rational roots of the polynomial equation

 2x3 + x2 – 8x – 3 = 0. Do not find the actual roots.

 23) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24) A polynomial equation with rational coefficients has the roots $8+ \sqrt{6}, and 4-\sqrt{3}$.

 Find two additional roots.

 24) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24) A polynomial equation with rational coefficients has the roots $8- \sqrt{617}, and-24+\sqrt{3}$.

 Find two additional roots.

 24) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_