**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Adv. Alg. Fall BM 2 Review**

**Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Add or Subtract. Write the polynomial in standard form. Identify the leading coefficient, degree, and number of terms. Name the polynomial**

$1) \left(3x^{4}-6x^{2}+8\right)-(-5x^{4}+x^{2}-10)$ $2) \left(-2x^{3}+3x^{5}-3\right)+(4x^{2}+3x^{3}+12x^{5})$

Standard Form: Standard Form:

Leading Coefficient: Leading Coefficient:

Degree: Degree:

Number of Terms: Number of Terms:

Name: Name:

**Identify the degree of the following monomials:**

3) $3x^{5}y^{2}$ 4) 9 5) $x^{10}$

**Expand the expressions.**

$6) (x-2)^{5}$ $7) (x+y)^{3}$

**Divide the following polynomials by the method of your choice.**

$8) \left(3x^{3}+9x^{2}-14\right)÷(x+2)$ $9) \left(15x^{3}-16x^{2}+x-2\right)÷(x-2)$

**Simplify the following radicals.**

$10) 2\sqrt{-200}$ 11) $-3\sqrt{-32}$ 12)$ \sqrt{\frac{72}{144}}$

**Simplify the following expressions.**

 $13) (3+4i)(1-6i)$ 14) $\left(5-12i\right)-4(3-i)$

15) $\frac{3+5i}{4-2i}$ 16) $\frac{-i}{6+5i}$

**Simplify using powers of i.**

17) $i^{36}-3i^{18}-10i^{47} $ 18)$ 2i^{13}+4i^{42} $

**For questions 21-24, write the EQUATION of a polynomial using the given roots.**

$19) Roots=-2 \left(mult of 2\right), -8 $ $20) Roots=2, 3, 0 (mult of 2)$

$21) Roots=\frac{4}{3}, -5$ $22) Roots=6, \pm 4$

**Determine the End Behavior of the following functions.**

23) $f\left(x\right)=x^{4}-3x^{3}-14x^{2}+12x+40 $ $24) f\left(x\right)=-x^{7}+18x^{5}-81x^{3} $

$$25) f\left(x\right)=x^{5}-37x^{3}+24x^{2}+180x 26) f\left(x\right)=-x^{4}+13x^{2}-36 $$

**Solve the following by FACTORING.**

$27) 4x^{3}-16x^{2}-180x=0$ 28$) 4x^{3}+4x^{2}=-x$

$29) x^{2}+7x=-10$ $30) 10x^{3}+2x^{2}-70x=14$

**Solve the following by THE QUADRATIC FORMULA.**

$31) x^{2}-6x+7=0 $ $32) 2x^{2}+3x-4=0$

33) $x^{2}+x+2=0$

**Solve the following variation problems.**

34) The cost of packing boxes, *c*, varies inversely with the number of boxes, *b*, purchased. If *c=$0.85* when *b=50*, determine the cost of packing 8 boxes.

1. Hooke’s law states that the distance d that a spring is stretched by a hanging object varies directly as the mass m of the object. If the distance is 30 cm when the mass is 6 kg, what is the distance when the mass is 8 kg?
2. The cost c of materials for a deck varies jointly with the width w and the length l. If c = $470.40 when w = 12 and l = 16 , find the cost when w = 10 and l = 25.
3. The time required to process a shipment of goods at Wal-Mart varies directly with the number of items in the shipment and inversely with the number of workers assigned. If 15,000 items can be processed by 8 workers in 10 hours, then how long would it take 12 workers to process 20,000 items?

**Simplify the following rational expressions and list the undefined values of each.**



**Multiply or Divide the Rational Expressions.**



**Choose the graph that represents the function. Determine the end behavior, y-intercept, and local max/min for each function.**







