Accel Geom/ Adv Alg Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spring Benchmark 1 Review Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Solve the following quadratics by FACTORING:**

 1. $x^{2}=7x+18$ 2. $f\left(x\right)=x^{4}+3x^{2}-4$

 3. $2x^{3}-7x=13x^{2}$ 4. $-4x=25x^{3}+20x^{2}$

**Simplify. Write the polynomial in standard form. Identify the leading coefficient, degree, and name the polynomial**

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

Standard Form:

Name:

**Multiply the following polynomials.**

$6) 3x(x-5)(3x-2)$ $7) -\left(6x-x^{2}+3\right)\left(4x+1\right)^{2}$

**Expand the expressions.**

$8) (4x-3)^{4}$ 9) $(2x+5y)^{5}$

$10)$ A coin is flipped 12 times. What is the probability of getting at least 10 heads?

$11)$ You just took your chemistry benchmark. Each question had 4 answer choices. What is the probability you got exactly 17 of the 20 questions correct?

$12)$ Everyone in your math class of 10 students has taken the driving test. The average passing rate is 78%. What is the probability that more than 2 classmates passed the test?

13) You visit 9 colleges during your Junior Year Spring Break. The chance of you being accepted at these prestigious universities is 37%. What is the probability you are accepted to either 4 or 5 universities?

14) Simplify  15) Factor completely: 

16) Simplify 

17) Which binomial is a factor of the polynomial ?

 A. (x + 4) B. (x – 2) C. (x + 2) D. (x – 4)

18) Find the zeros of the function. $f(x)=4x^{4}-10x^{3}+4x^{2}$

19) Find the product $2cd^{4}(-4c^{6}d^{5}-c^{3}d)$ 20) Divide $\left(6x^{3}+5x-8\right)÷(x-2)$

21) Factor $x^{3}+5x^{2}-9x-45$ 22) Factor the expression $81x^{6}+24x^{3}y^{3}$

23) Write the simplest polynomial function with zeros 5, -4, and$\sqrt{2}$

24) After studying a couple's family history, a doctor determines that the probability of any child born to this couple having a gene for disease X is 1 out of 4.  If the couple has three children, what is the probability that at least two of the children have the gene for disease X?

25) Find roots of the polynomial function $f\left(x\right)=x^{3}+3x^{2}-10x+6$

$26) \left(2x+3\right)^{2}(x-1)^{2}$

$27) $How do you name polynomials based on the degree? Consider degrees of 0, 1, 2, 3, 4, 5

**Factor completely.**

$28) -12x^{4}+10x^{3}+8x^{2}$ $29) 81a^{2}b^{8}-100c^{22}$

$30) 81a^{2}b^{4}-121c^{18}$ $31) 3x^{5}+2x^{3}-81x^{2}-54$

$32) 40x^{6}-135x^{3}$ $33) 6x^{7}-6x$

$34) -3x^{13}+21x^{9}+54x^{5}$ $35) 2x^{10}+3x^{8}-32x^{6}-48x^{4}$

$36) x^{4}-3x^{2}-18$

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

$37) \left(-8x^{4}+12x^{2}-x-1\right)÷(2x-3)$



**List the possible rational roots of the following function**

$40) f\left(x\right)=2x^{4}-x^{3}+23x^{2}-25x-10$

41) Solve for the zeros of$f\left(x\right)=x^{3}-6x^{2}+49x-294$

42) Find the roots$f\left(x\right)=x^{4}-4x^{3}+20x^{2}-64x+64$

**Write a polynomial function with the given zeros.**

$43) 1+4i, \frac{3}{2}$ 44) $-3-\sqrt{3}$, 2

$45) x=\frac{-1}{2}, 0, -4$ 46) $x=0 mult of 3, \frac{4}{5} mult of 2$