Honors & College Prep

Pre Calculus Summer Assignment – Mandatory Name _____

This assignment is due the first week of school. There will be assessments based upon this assignment at the beginning of the year.

Use the following Textbook Links for additional support.

Appendix A.1
Appendix A.2
Appendix A.3
Appendix A.5

Use the following Khan Academy links for additional support.

Appendix A.1
Intervals and Interval Notation
Operations with Rational Numbers

Appendix A.2
Multiply Powers
Powers of Powers
Divide Powers
Negative Exponents
Powers of 0
Integer Exponents
Intro to Rational Exponents
Rewrite Roots as Rational Exponents
Evaluating Fractional Exponents and Evaluating Fractional Exponents
Fractional Base
Rationalize the Denominator
Simplifying Challenging Expressions with Fractional Exponents

Appendix A.3
Intro to Difference of Squares
Difference of Squares Leading Coefficient is not 1
Difference of Squares Two Variables
Basic Factoring a=1
Factor by Grouping
Factoring where a is not 1
Factor out common factor & factor by grouping
Factoring Difference of Cubes (Honors Only)

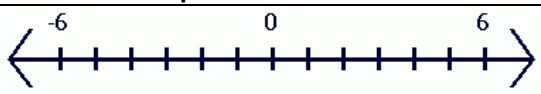
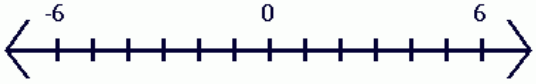
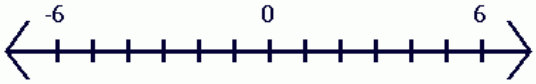
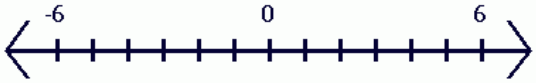
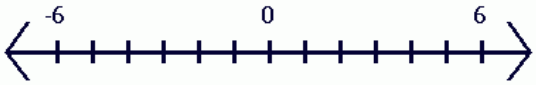
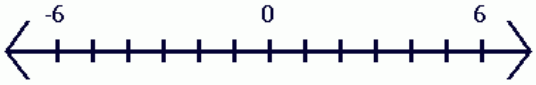
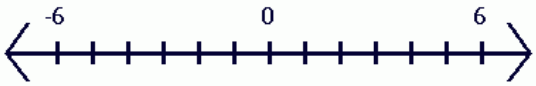
Appendix A.5
Solve Equations with Fractions
Solve Quadratics by Factoring
Solve Quadratics by taking Square Root
Solve Quadratics by Quadratic Formula
Solve Square Root Equations

Name _____

Pre Calculus Summer Assignment – Mandatory

APPENDIX A.1: REVIEW OF FUNDAMENTAL CONCEPTS OF ALGEBRA

Complete the table below representing inequalities using interval notation and graphed on a number line.

	Inequality	Interval Notation	Graph on Number Line
1)	$x \leq 5$		
2)	$x > 3$		
3)		$[4, \infty)$	
4)		$(-\infty, 2)$	
5)	$-2 < x < 2$		
6)	$-1 \leq x < 0$		
7)		$(-1, 2]$	

Perform the Operations. Write fractional answers in simplest form.

8) $\frac{3}{16} + \frac{5}{16}$

9) $\frac{6}{7} - \frac{4}{7}$

10) $\frac{5}{8} - \frac{5}{12} + \frac{1}{6}$

11) $\frac{10}{11} + \frac{6}{13} - \frac{13}{66}$

12) $12 \div \frac{1}{4}$

13) $-\left(6 \cdot \frac{4}{8}\right)$

APPENDIX A.2: EXPONENTS AND RADICALS

Evaluate each expression without a calculator using the rules of exponents.

1) $3^2 \cdot 3$

2) $3 \cdot 3^3$

3) $\dfrac{5^5}{5^2}$

4) $(3^3)^0$

5) -3^2

6) $(2^3 \cdot 3^2)^2$

7) $\left(-\dfrac{3}{5}\right)^3 \left(\dfrac{5}{3}\right)^2$

8) $\dfrac{3 \cdot 4^{-4}}{3^{-4} \cdot 4^{-1}}$

9) $32(-2)^{-5}$

10) $(-2)^0$

11) $2^{-1} + 3^{-1}$

12) $(2^{-1})^{-2}$

Evaluate each expression for the given value of x without a calculator.

13) $-3x^3 \ when\ x = 2$

14) $7x^{-2} \ when\ x = 4$

15) $6x^0 \ \ when\ x = 10$

16) $5(-x)^3 \ when\ x = 3$

17) $2x^3 \ when\ x = -3$

18) $-3x^4 \ when\ x = -2$

19) $4x^2 \ \ when\ x = -\dfrac{1}{2}$

20) $5(-x)^3 \ when\ x = -\dfrac{1}{3}$

21) $-7x \ when\ x = 0$

Simplify each expression without using a calculator.

22) $(-5z)^3$

23) $(3x)^2$

24) $6y^2(2y^0)^2$

25) $(-z)^3(3z^4)$

26) $\dfrac{7x^2}{x^3}$

27) $\dfrac{x^4}{x^6}$

28) $5x^4(x^2)$

29) $(4x^3)^0$

30) $\dfrac{25y^8}{10y^4}$

Evaluate each expression without using a calculator.

31) $\sqrt{9}$

32) $\sqrt[3]{\dfrac{27}{8}}$

33) $27^{\frac{1}{3}}$

34) $36^{\frac{3}{2}}$

35) $32^{-\frac{3}{5}}$

36) $\left(\dfrac{16}{81}\right)^{-\frac{3}{4}}$

37) $100^{-\frac{3}{2}}$

38) $\left(\dfrac{9}{4}\right)^{-\frac{1}{2}}$

39) $\left(-\dfrac{1}{64}\right)^{-\frac{1}{3}}$

40) $\left(\dfrac{1}{\sqrt{32}}\right)^{-\frac{2}{5}}$

41) $\left(-\dfrac{125}{27}\right)^{-\frac{1}{3}}$

42) $-\left(\dfrac{1}{125}\right)^{-\frac{4}{3}}$

Simplify each radical expression.

43) $\sqrt{8}$

44) $\sqrt[3]{54}$

45) $\sqrt[3]{\frac{16}{27}}$

46) $\sqrt{72x^3}$

47) $\sqrt{\frac{75}{4}}$

48) $\sqrt[3]{-32x^6y^4}$

49) $\sqrt{\frac{18^2}{z^3}}$

50) $\sqrt{54xy^4}$

51) $\sqrt{\frac{32a^4}{b^2}}$

52) $\sqrt[3]{16x^5}$

53) $\sqrt{75x^2y^{-4}}$

54) $\sqrt[4]{3x^4y^2}$

55) $\sqrt[5]{160x^8z^4}$

56) $2\sqrt{50} + 12\sqrt{8}$

57) $10\sqrt{32} - 6\sqrt{18}$

Rationalize the denominator of the expression. Then simplify your answer.

58) $\frac{1}{\sqrt{3}}$

59) $\frac{5}{\sqrt{10}}$

60) $\frac{2}{5-\sqrt{3}}$

Perform the operations and simplify.

61) $\dfrac{(2x^2)^{\frac{3}{2}}}{2^{\frac{1}{2}}x^4}$

62) $\dfrac{x^{\frac{4}{3}}y^{\frac{2}{3}}}{(xy)^{\frac{1}{3}}}$

63) $\dfrac{x^{-3}\cdot x^{\frac{1}{2}}}{x^{\frac{3}{2}}\cdot x^{-1}}$

64) $\dfrac{5^{-\frac{1}{2}}\cdot 5x^{\frac{5}{2}}}{(5x)^{\frac{3}{2}}}$

APPENDIX A.3: POLYNOMIALS AND FACTORING

Completely factor the difference of two squares.

1) $x^2 - 81$

2) $x^2 - 49$

3) $32y^2 - 18$

4) $4 - 36y^2$

5) $16x^2 - \dfrac{1}{9}$

6) $\dfrac{4}{25}y^2 - 64$

7) $(x-1)^2 - 4$

8) $25 - (z+5)^2$

9) $9u^2 - 4v^2$

10) $25x^2 - 16y^2$

Factor the trinomial.

11) $x^2 + x - 2$

12) $x^2 - 5x + 6$

13) $20 - y - y^2$

14) $x^2 - 30x + 200$

15) $3x^2 - 5x + 2$

16) $5x^2 + 26x + 5$

17) $-9x^2 + 3x + 2$

18) $12x^2 + 7x + 1$

Factor by grouping.

19) $x^3 - x^2 + 2x - 2$

20) $2x^3 - x^2 - 6x + 3$

21) $6 + 2x - 3x^3 - x^4$

22) $6x^3 - 2x + 3x^2 - 1$

Factor the trinomial.

23) $3x^2 + 10x + 8$

24) $2x^2 + 9x + 9$

25) $6x^2 + x - 2$

26) $6x^2 - x - 15$

27) $15x^2 - 11x + 2$

28) $12x^2 - 13x + 1$

Factor the sum or difference of cubes HONORS ONLY

29) $y^3 - 8$

30) $x^3 - 27$

31) $y^3 + 64$

32) $z^3 + 125$

33) $8x^3 - 1$

34) $27x^3 + 8$

35) $u^3 + 27v^3$

36) $64x^3 - y^3$

Factor Completely.

37) $49x^2 - 4$

38) $3x^2 + 33x + 72$

39) $5a^2 - 2ab - 16b^2$

40) $3x^2 + 20x - 7$

41) $4xy^2 - 15xy + 11x$

42) $2x^2 + 6x - 80$

43) $x^2 - 15x + 56$

44) $20y^3 - 60y^2 + 45y$

45) $x(x^2 - 1) - 4(x^2 - 1)$

46) $50x^4 - 32x^2$

47) $3x^3 - 21x^2 + 30x$

48) $2x^2 + 18$

49) $x^3 - 5x^2 - x + 5$

50) $x^6 + 2x^4 - 16x^2 - 32$

51) $x^4 - 13x^2 + 40$

52) $x^6 - 4x^2$

53) $2x^4 + x^2 - 6$

54) $2x^2 - 13x + 20$

APPENDIX A.5: SOLVING EQUATIONS

Solve the equation and check your solution.

1) $3(x+3) = 5(1-x) - 1$

2) $x - 3(2x+3) = 8 - 5x$

3) $9x - 10 = 5x + 2(2x-5)$

4) $\frac{5x}{4} + \frac{1}{2} = x - \frac{1}{2}$

5) $\frac{x}{5} - \frac{x}{2} = 3 + \frac{3x}{10}$

6) $\frac{3}{2}(z+5) - \frac{1}{4}(z+24) = 0$

7) $\frac{3x}{2} + \frac{1}{4}(x-2) = 10$

8) $7x + 3 = 3x - 17$

Solve the quadratic equation by factoring.

9) $6x^2 + 3x = 0$

10) $9x^2 - 1 = 0$

11) $x^2 - 2x - 8 = 0$

12) $x^2 - 10x + 9 = 0$

13) $x^2 + 10x + 25 = 0$

14) $4x^2 + 12x + 9 = 0$

15) $3 + 5x - 2x^2 = 0$

16) $2x^2 = 19x + 33$

17) $x^2 + 4x = 12$

18) $-x^2 + 8x = 12$

19) $\frac{3}{4}x^2 + 8x + 20 = 0$

20) $\frac{1}{8}x^2 - x - 16 = 0$

Solve the equation by extracting square roots.

21) $x^2 = 49$

22) $x^2 = 11$

23) $3x^2 = 81$

24) $(x - 12)^2 = 16$

25) $(x + 2)^2 = 14$

26) $(2x - 1)^2 = 18$

Use the Quadratic Formula to solve the equation.

27) $2x^2 + x - 1 = 0$

28) $16x^2 + 8x - 3 = 0$

29) $2 + 2x - x^2 = 0$

30) $x^2 + 14x + 44 = 0$

Find all solutions of the equation. Check your solutions in the original equation.

31) $\sqrt{2x} - 10 = 0$

32) $4\sqrt{x} - 3 = 0$

33) $\sqrt{x-10}-4=0$

34) $\sqrt{5-x}-3=0$

35) $\sqrt[3]{2x+5}+3=0$

36) $\sqrt[3]{3x+1}-5=0$

Solve the equation using any convenient method.

37) $x^2-2x-1=0$

38) $11x^2+33x=0$

39) $(x+3)^2=81$

40) $x^2-14x+49=0$

41) $x^2 - x - \frac{11}{4} = 0$

42) $x^2 + 3x - \frac{3}{4} = 0$

43) $(x+1)^2 = x^2$

44) $a^2x^2 - b^2 = 0$, a and b are real numbers

45) $3x + 4 = 2x^2 - 7$

46) $4x^2 + 2x + 4 = 2x + 8$