ARLINGTON HIGH SCHOOL

# Summer Assignment Template

**Course Title: AP Pre-Calculus**

**Teacher: Carla Parham**

**PLC Content Area: Mathematics**

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| Summer Assignment Description | Review of pre-requisite skills that students need to be able to complete without a scientific/graphing calculator to be successful in this course. |
| Date Due | First Day of Class |
| Estimated Time for Completion | 2-3 hours |
| Tennessee Academic Standards/Approved Standards Supporting Reference (List standard(s) correlation to summer work) | A2.A.SSE.A.1 Use the structure of an expression to identify ways to rewrite it.<br><br>A2.A.APR.A.1 Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).<br><br>5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.<br><br>7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.<br><br>5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction by a fraction.<br><br>A1.A.APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.<br><br>A1.A.REI.B.2 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.<br><br>A1.A.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.<br><br>A1.A.REI.B.3 Solve quadratic equations and inequalities in one variable. |

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| | A1.A.REI.C.4 Write and solve a system of linear equations in context.<br><br>A1.A.REI.D.5 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).<br><br>A1.A.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales. |
| Rationale for Summer Assignment | Students taking AP Pre-Calculus need basic non-calculator skills to be successful in the class. This assignment allows practice of the pre-requisite skills students should already know. |
| Resources needed to complete Summer assignment | Previous math knowledge. Students may use the internet email me if they have forgotten how to work certain problems. |
| How and when will this summer assignment be assessed and scored? Also, what grading category and what percentage will this summer assignment count in the student's grade? | The summer assignment will be collected the first day of class. It will be a 30-point HW/CW grade and will be graded based completion and work shown (most HW/CW assignments are 10 points in my course). The percentage of the student's grade will be based on how many assignments in have in the Q1 HW/CW category. The HW/CW category is 25% of the average.<br><br>The summer assignment material will be tested during the second week of school. Videos will be provided working the entire summer assignment and time will be available in class for students to ask questions before the test. The test will be a 50-point grade (the other tests will be 100-points). |
| Additional Summer Assessments (If applicable - what grading category and what percentage will each additional summer assignment count in the student's grade?) | n/a |
| Teacher Summer Contact Information | carla.parham@acsk-12.org |

**Arlington High School**
**AP Pre-Calculus ~ Summer Packet DUE THE FIRST DAY OF SCHOOL**

This summer packet is for all students enrolled in AP Pre- Calculus for the 2023-2024 school year. The entire packet is due the first day of school...please print a hard copy of the packet or pick one up in my room (105). Any packets not turned in the first day of school will not be eligible for full credit. Students who do not turn in a packet after 2 school days will receive a zero. The problems in this packet are designed to help you review topics that are important to your success in AP Pre-Calculus. You will be tested on this material. **You will NOT be allowed to use a calculator on the Test**.

Follow the directions in the packet and complete all the problems, neatly showing all of your work. You will not be given credit for this packet if no work is shown. You should not use a calculator when completing this packet. This packet will count as part of your first quarter grade.

I look forward to meeting you and working with you in the Fall. Enjoy your summer!

AP Pre-Calculus Summer Work Name_____

Simplify each expression.

1. $(-4)^2$ 2. $-4^2$ 3. $4^{-2}$ 4. $-4^{-2}$

5. $(5x^3)^2$ 6. $(-4x^2)^{-1}$ 7. $(x^3y^{-2})^{-1}$

8. $\frac{x^2y^3}{xy^5}$ 9. $\frac{4x^{-2}(yz)^{-1}}{2^2x^4y}$ 10. $\left(\frac{3x^{-1}}{4y^{-1}}\right)^{-2}$

Add, subtract, or multiply, as indicated. Express your answer as a single polynomial.

11. $(x^3 + 2x^2 + 3) + (x^2 - 3x + 3)$ 12. $(x^2 - 2x - 4) - (x^3 - 2x^2 - x + 2)$

13. $4x^2(x^4 - 2x + 3)$ 14. $(2x - 4)(x + 2)$

15. $(2x - 5)^2$ 16. $(2x - 4)(3x^3 - 4x + 2)$

Factor each polynomial completely.

17. $x^2 - 49$

18. $4x^2 - 9y^4$

19. $5 - 45x^2$

20. $x^2 + 5x + 6$

21. $x^2 + 5x + 4$

22. $x^2 + 3x - 4$

23. $x^3 + 7x^2 - 30x$

24. $3x + 3$

25. $2x^2 - 9x + 10$

26. $x^3 - 3x^2 + 2x - 6$

27. $x^3 - 7x^2 + 5x - 35$

Use synthetic division to find the quotient and remainder when:

28. $x^3 - x^2 + 2x + 4$ is divided by $x - 2$

29. $x^5 + 5x^3 - 10$ is divided by $x + 1$

Reduce each rational expression to lowest terms.

30. $\frac{3x+9}{x^2-9}$

31. $\frac{2x^2+5x-3}{1-2x}$

32. $\frac{\frac{x^2+7x+6}{x^2+x-6}}{\frac{x^2+5x-6}{x^2+5x+6}}$

Solve each equation.

33. $2x - 3 = 5$

34. $6 - x = 2x + 9$

35. $5 - (2x - 1) = 10$

36. $\frac{2}{y} + \frac{4}{y} = 3$

37. $x^2 = 4x$

38. $|3x - 1| = 2$

39. $2x^2 - 5x - 3 = 0$

40. $x^2 - 4x = -2$

41. $x^3 + 4x^2 - x - 4 = 0$

Simplify each expression. (Your answer should NOT contain a decimal.)

42. $\sqrt{8}$

43. $\sqrt{54}$

44. $\sqrt{16x^5}$

45. $3\sqrt{7} + 2\sqrt{7}$

46. $(\sqrt{7} - 2)(\sqrt{7} + 4)$

47. $(\sqrt{x} + \sqrt{3})^2$

Rationalize the denominator.

48. $\frac{1}{\sqrt{3}}$

49. $\frac{-\sqrt{2}}{\sqrt{5}}$

50. $\frac{3}{2-\sqrt{5}}$

Perform the operation indicated.

51. $\frac{1}{3} + \frac{3}{4}$

52. $\frac{x}{5} + \frac{x}{3}$

53. $\frac{2}{5} - \frac{1}{3}$

Perform the operation indicated.

54. $3 - \frac{4}{7}$

55. $\frac{2}{5} \cdot \frac{1}{4}$

56. $4 \cdot \frac{3}{5}$

57. $\frac{2}{5} \div \frac{1}{4}$

58. $3 \div \frac{2}{5}$

59. $\dfrac{\frac{8}{9}}{\frac{3}{16}}$

60. $\dfrac{\frac{y}{5}}{\frac{y^2}{20}}$

Solve each equation. Answers should be simplified without using decimals. No solution is not possible for these problems.

61. $x^2 - 4x + 2 = 0$

62. $4x^2 = 1 - 2x$

Find an equation for the line:

63. containing the points $(1,3)$ and $(-1,2)$

64. x-intercept $= -4$; y-intercept $= 4$

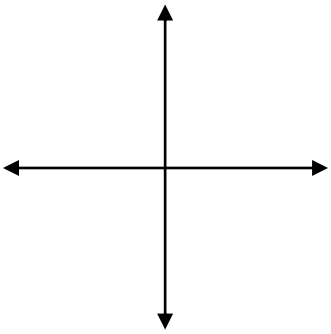
Solve the system of equations.

65. $x + 2y = -7$
$x + y = -3$

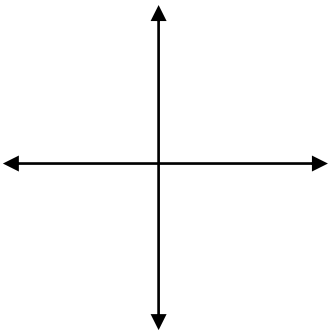
66. $3x - 6y = 2$
$5x + 4y = 1$

Graph.

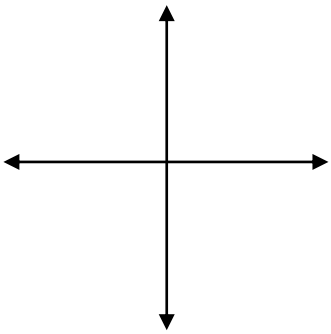
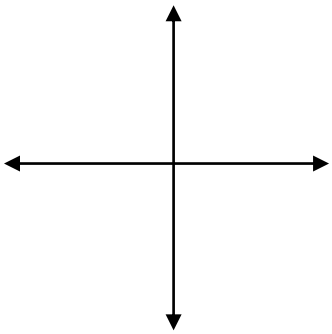
67. $y = -x + 3$



68. $2x + 3y = 6$



69. $x = 3$



70. $3y = 2x - 1$