### ALGEBRA II SUMMER PACKET Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Review of Algebra 1 Skills**

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| **Evaluate each expression. . Leave ALL answers as fractions.**  |
| **1.** | **2.**  |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Simplify each expression.**  |
| **3.**  | **4.**  |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Solve each equation. Leave ALL answers as fractions.**  |
| **5.** | **6.**  |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **7.**  | **8.** |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **9.** When solving a linear equation, your friend works through the problem correctly and her last step says -8 = -8. What should she write down as her “solution”?  |

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| **Solve each inequality. Leave ALL answers as fractions.**  |
| **10**. 3(2 − *m*) < 2(2 − *m*) − *m* | **11.** 2(*x* + 4) ≥ − 2(8 − 2*x*) +10 | **12.** − 2 < 5(*x* +1) + 2 < 12 |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Use the given information to answer the question.**  |
| **13. Amusement Park Trip** Your travel arrangements to an amusement park include a ground trip driving distance of 216 miles. The planned travel time is 4 hours. What must your average speed be to make the trip in the allotted time? |
| **Speed = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **14. Photography Studio** A photography studio advertises a session with a sitting fee of $8.95 per person. The standard package of pictures costs $29.25. Write an expression that gives the total cost of a session with the purchase of one standard package. Evaluate the expression if a family of four purchases this package. |
| **Expression for Total Cost = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Family of Four Cost = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **15. Lighting Configuration** You want to install 3 ceiling lights in a row to improve the visibility in your garage. Each light is 3 feet long and your garage is 27 feet long. The distance between each light, and between the lights and the walls, should the same. Draw a diagram to help solve this problem. What is the distance between successive lights? |
| **Distance = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Identify the domain and range of the relation. Then, determine whether the relation is a function by answering Yes or No.**  |
| **16.**  | **17.**  |
| **Domain = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Range = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Domain = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Range = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Function? YES NO** |  | **Function? YES NO** |  |

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| **Use the vertical line test to determine whether the relation is a function. Answer Yes or No.** |
| **18.**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  | **19.****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  |
| **Evaluate the function for the given value of *x*. Leave ALL answers as fractions.**  |
| **20.**  | **21.** |
| = \_\_\_\_\_\_\_\_\_\_\_\_\_ | = \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Find the slope of the line passing through the given points. Then tell whether the line *rises, falls, is horizontal*, or *is vertical***. |
| **22.** (8, 7), (8, -3) | **23.**  |
| *m* **= \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | *m* **= \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Determine whether the lines are *parallel, perpendicular,* or *neither.***  |
| **24.** Line 1: through (7, 3), (8, 7)Line 2: through (−5, −4), (−1, −5) | **25.** Line 1: through (5, 2), (1, −7)Line 2: through (−1, 3), (9, −1) |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

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| **Use the information to write an equation of the line in slope-intercept form.****Slope-Intercept Form Point-Slope Form  Standard Form** Ax + By = C |
| **26.**  | **27.** through the point  |
| EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  | EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| **28.**  through the point  | **29.** through the point  |
| EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  | EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| **30.** through the points  | **31.** through the points  |
| EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  | EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| **32.** Parallel to , passes through  | **33.** Perpendicular to , passes through  |
| EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |  EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| **Use the graph to write an equation of the line.**  |
| **34.**  EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **35.** EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Use the information to graph the equation.** |
| **36. Graph using the slope and y-intercept****m = ­­­­­­\_\_\_\_\_\_\_\_ b = \_\_\_\_\_\_\_** | **37. Graph using the slope and y-intercept****m = ­­­­­­\_\_\_\_\_\_\_\_ b = \_\_\_\_\_\_\_** |
| **38. Graph a line using the x- and y-intercept**  x-intercept: –3  y-intercept: 4  | **39.** Write the equation that is the translation of  right 3 units and up 4 units.**Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **40.** An absolute value equation \_\_\_\_\_\_\_\_ has an extraneous solution.1. **always**
2. **sometimes**
3. **never**

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| **Solve the equation. Check for extraneous solutions. Leave ALL answers as fractions.**  |
| **41.**  | **42.**  | **43**.  |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
|  **Solve the inequality. Graph the solution. Show the interval notation.** |
|  **44.**  |  **45.**  |
| **Graph the Absolute Value equation. Be sure to include ALL of the following for each graph.** **A. Find the Vertex** **B. Graph the Function** **C. Find the Axis of Symmetry** **D. Does it stretch, if so by how much?** **E. State the domain and range.** **F. Describe end behavior.** |
|  **46.**

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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

 |  **47.**

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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

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| **Solve the System of Equations using any method.** |
| **48.**  | **49.**  | **50.**  |
| **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **51. 51.** A rental car agency charges a flat fee of $24.00 plus $2.00 per day to rent a certain car.  Another agency charges a fee of $18.75 plus $3.75 per day to rent the same car.

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|  | Write a system of equations to represent the cost *c* for renting a car at each agency for *d* days.Using a graphing calculator, find the number of days for which the costs are the same. Round your answer to the nearest whole day. |

 **Answer: \_\_\_\_\_\_\_\_\_\_\_ Days \_\_\_\_\_\_\_\_\_\_\_ Cost**  |
|  **52.** A group of 75 people attended a ball game. There were four times as many children as adults in the group. Set up a system of equations that represents the numbers of adults and children who attended the game and solve the system to find the number of children who were in the group. **Answer: \_\_\_\_\_\_\_\_\_\_\_ # of Adults \_\_\_\_\_\_\_\_\_\_\_ Cost**  |
| **Solve the system of inequalities by graphing.** |
| **53.**   | **54.**   |
| **Identify the vertex, axis of symmetry, domain, and range of each parabola. Use Interval Notation.** |
| **55.** | **Vertex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Axis of Symmetry:\_\_\_\_\_\_\_\_****Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_** | **56.**  *TT_PH_EN_MA_A2_2004_05B/MTH_A204_05_99_294_2.gif* | **Vertex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Axis of Symmetry:\_\_\_\_\_\_\_\_****Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Rewrite each function in standard form. Determine whether the function is linear or quadratic.** |
| **57.** **Y = 2x(x+1)–4+x**$ 2x\left(x+1\right)-4+x$ | **58.** **Y = 4x2 + 12x + 9 – 4x2 + 3**$ 2x\left(x+1\right)-4+x$ | **59.**  **Y = (2x+3)(x-4)** $ 2x\left(x+1\right)-4+x$ | **60.**  **Y = 3(x2 – 2x) – 3( x2 – 2)** $ 2x\left(x+1\right)-4+x$ |
| **Standard Form:** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Circle: Linear or Quadratic** | **Standard Form:** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Circle: Linear or Quadratic** | **Standard Form:** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Circle: Circle: Linear or Quadratic**  | **Standard Form:** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Circle: Circle: Linear or Quadratic**  |
| **Factor the Following Polynomials.** |
| **61.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **62.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **63.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **64.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **65.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **66.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **67.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **68.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Graph the Quadratic equation. Be sure to include ALL of the following for each graph.** **A. Find the Vertex** **B. Graph the Function** **C. Find the Axis of Symmetry** **D. Does it stretch, if so by how much?** **E. State the domain and range.** **F. Describe end behavior.** |
|  **69. y = 2(x + 1)2 - 4**

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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

 |  **70. y = -(x - 2)2 +1**

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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

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| **71. y = -x2+5x-3**

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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

 | **72. y = 2x2+8x-3**

|  |  |
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| **A** |  |
| **B** | *See graph above* |
| **C** |  |
| **D** |  |
| **E** | Domain:Range: |
| **F** |  |

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| **Solve the story problem.** |
| **73. The function** $y=-16x^{2}+486$ **models the heights *y* in feet of a stone *x* seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth.** **Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |