**Review for Algebra 1 Midterm Exam Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Directions: Solve all problems double method place answer in blank.**

**1.** (a.) Find the equation in modified point-slope form of the line

 that runs through the following points: ( – 7, 5) (3, – 6)

 Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (b.) Find the equation of the line in slope-intercept form that runs

 through the following point: ( – 12, 15) with a slope of −⅜

 Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2.** Find the equation in Standard Form of the line through the point Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ( 4, – 4 ) with a slope of – 4.

**3. Derive** the equation of a line in **Slope-Intercept form** that passes Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 through the point (8, 6) and is parallel to the line y = 3x + 12

**4. Derive** the equation of a line in **Slope-Intercept form** that passes Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 through the point (5, 2) and is perpendicular to the line y = ⅞ (x + 10)+1

**5.**  Find the slope and the equation of the line through the points (0, – 2) and (0 , 7). Slope:\_\_\_\_\_\_\_\_\_\_

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.** Solve the following equations:

(a.)  Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b.) x +  =  x +  Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7.** Solve and **Graph** on number line provided the following inequalities:

 (a.) 6x + 7 > 37 Solution: \_\_\_\_\_\_\_\_\_\_\_\_ Graph:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (b.) 46 – 7x ≥ 12 + 5x Solution: \_\_\_\_\_\_\_\_\_\_\_\_ Graph:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8.** Rewrite the following equation into Standard and Slope-Intercept Form.

 y + 4 = –3 (x – 9)

 Standard Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slope-Intercept Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**9.** Solve the following for the indicated variable. If necessary

 give exact simplified answers.

(a.) –6(3x – 9) = –234 x=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(a.) 3(2x2 –20) 2 + 22 = 8134 x=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10.** Solve the following for the indicated variable. If necessary

 give exact simplified answers.

(a.) 9(2x + 7) – 25 = – 5(7x + 4) Solution:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11. Solve** the expression when: x = 9.5; y = – 9 ; and z = – 2 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 

**12.** Situation: You are the leader of an archeological dig. You need to construct a triangular boundary for your dig. The boundaries for the dig are in the table and graph as show below. The length of each little square (dotted line) is 1 yard. Complete following figure, calculate the equations, find the points of the dig, and Domain and Range for each side. Record data in table.

  **Table**

 Line Point Equation Domain Range

  **S**egment

 **ab. a.** \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

 **a.**

 **bc.** **b.** \_(6,6)\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

 **ac.** **c.**\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

 **c.**

**13.** Graph the data, determine the type of correlation, and find the slope and equation(s) of the trend line

 (line of fit) for the following points: (Error in Trend line: slope ± ½; y-axis intercept ± 2.5)

Number of Seconds(x): 2.9 18 11 7.3 17 .8 4 19

Number of Revolutions (y): 36 85 66 50 78 14 28 97

 a. Type of Correlation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. Trend Line Slope: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. Standard Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d. Slope Intercept Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 e. Point Slope Form Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**14.** Graph the data, determine the type of correlation, and find the slope and equation(s) of the trend line (line

 of best fit) for the following points: (Error in Trend line: slope ± ½; y-axis intercept ± 1.0)

You must label and scale your graph to use as much of the graph as possible starting at 0.

Time in weeks (x): 85 20 50 72 56 91 5 81 16 10

Widgets pressure in PSI (y): 18 2.9 7.5 15 8.3 19 .8 16 2 1.3

 Type of Correlation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Slope: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Method 1 Method 2 .

 Modified Point-Slope Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Slope-Intercept Form Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 0

Work for Equations and Verification of Equations:

 Method 1 Method 2

**15.** The table shows how the temperature of a pot of water changes over time as it is

 being heated. Assume the temperature increases linearly with time.

|  |  |
| --- | --- |
| Time (sec.) (x) | Temperature (oF) (y) |
| 9 | 35 |
| 17 | 84 |

 (a.) Graph the data.

 (b.) Write the equation in slope-intercept form

 of the line representing the data. Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (c.) What temperature would the water

 reach at 36 seconds ? Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (d.) How long in seconds would it take

 the water to boil (212 oF)? Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(e.) What is the assumed starting temperature according to your graph?

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(f.) What is an appropriate domain and range for this function? Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_

 Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**16.**  **Graph** the following inequality on the X-Y Coordinate Plane:

  **y > ⅜ x – 3**

**Determine** and **Explain** why the following is a function or non-function:

 4

 6

 3

 6

 2

 7

-9

 5

**17. Function / Non-Function** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **WHY:**

**18.** Tell whether the ordered pair is a solution to the equation.

** (18, – 4)** Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**19.**  The length of each little square (dotted line) is 1 yard. Complete following figure, calculate the equations in **Modified Point-Slope** form  **and the area under the graph**,

20 .

 (a.) Write the equationsModified Point-Slope

 Segment

 **r.** Slope: \_\_\_\_\_\_\_\_\_\_\_\_ Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **s.**

10 **s.** Slope: \_\_\_\_\_\_\_\_\_\_\_\_ Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **r.** **t.**

5 .

 t. Slope: \_\_\_\_\_\_\_\_\_\_\_\_ Equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 0 5 10 15 20

(b.) Area under segment r. Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c.) Area under segment s. Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(d.) Area under segment t. Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(e.) Total Area under graph. Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**20.**  Graph the line y = 3x – 9. Then graph **21.** Graph the line y = – x + 7. Then graph

 the line that is parallel to y = 3x – 9 the line that is perpendicular to y = – x + 7

 that goes through the point (– 4, – 1) that goes through the point (2, 3)

 Write the Equation of the Parallel line. Write the Equation of the Perpendicular line.

 ⎜ ⎜ line equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ┴ line equation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_