

Algebraic Connections Spring 2000 Seniors Final Examination

Get the **SR.*g** file from your email and send it to your calculator. This should give you these programs: **SPRINGS**, **GEOMETRY**, and **PARAFUN**.

Don't forget to do the following before you leave school: Fill out the Spring Survey and return it to me electronically, turn in your calculator - if we lent you one, and turn in your Portfolio - due May 16.

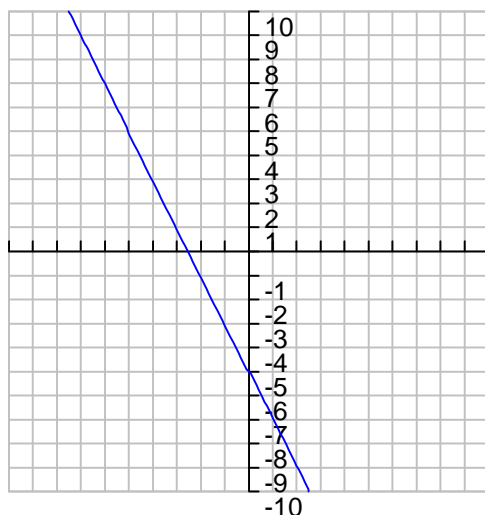
Report the answers to the questions using the problem numbers, showing all work, documenting your solutions, and including the answer to the question! Name, Date, Period, and What it is.

1. During this examination, use at least one of the following technologies, in an effective attempt to solve one of the questions below. Use Geometer's SketchPad, Excel, TI-Interactive!, Graphical Analysis, GroupWise, GraphLink, Word, and/or Netscape Composer. Report the following information with your use:
 - a) what problem you were solving,
 - b) which of the technologies was used, and
 - c) why you think this was an effective use of the technology to solve the problem.
2. Go to the Data and Story Library and do a Power Search for a topic of interest (not Economics). From the list of hits, select a story that appears to have the pattern of one of the 6 Models. Give me the following information:
 - a) A link to the data and a summary of the story as well as the name of the Model.
 - b) Make a Histogram of the Dependent values (Y), using a Window that is appropriate for the data.
 - c) Describe the pattern revealed in the Histogram.
 - d) Give the Big 8 for the data used to make the Histogram.

<i>n</i>	mean	median	mode	Average	Maximum	minimum	range
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3. Using the data from the **SPRINGS** program, answer the following. The X-values (**FXS** or **L₁**) are time in hours and the Y-values (**FYS** or **L₂**) are temperature in degrees Celsius.
 - a) Record exactly what you keyed in for your AGE.
 - b) Provide a Scatter Plot of the data with a Window.
 - c) Determine the best Model for the graph and name it.
 - d) Give the best fit Bubble Baby or Regression equation and Graph.
 - e) Use your equation to predict the temperature after 7.77 hours, 0.555 hours, and 100 seconds before the start of the experiment.
 - f) When would the temperature be -40 degrees Celsius, according to your model?
 - g) Explain a situation that would produce this shape of graph.
 - h) Based on the results above, how confident are you that your model "fits" the event?
4. Give the scores needed by a student in Algebraic Connections to make an 87% for the Spring Semester assuming that they made different grades on the two Portfolios. Verify that these scores would produce the desired grade.

5. Find the slope and equation of the line that passes through the points $(-7, 112)$; $(1, 72)$; and $(14, 7)$.
6. Identify two points on the line below, and make a right triangle to calculate the slope of the line. Then use another method to verify this slope. Finally give the equation of the line.



7. Find the following information for: $y = -3 * |1x - 5| + 8$
 - a) Maximum or Minimum,
 - b) Slope of Right and Left sides,
 - c) Y-Intercept,
 - d) X-Intercept(s).
 - e) Explain the meaning of one of the above answers if x is the number of hours worked in a month, and y is your take home pay.
8. Construct a regular Pentagon and use the **GEOMETRY** program to verify the figure is what it is reported to be.
9. FOIL the following:

$$(7x - 11)(5x + 6)$$

10. Solve the following equation:

$$3k^2 - 50 - 25k = 0$$

11. Find the Intersection for the following set of equations:

$$2x + 3y = 2$$

$$3x - 5y = 22$$

12. Solve the following equation by Factoring (UN-FOILing). Verify your solution using the Graphing Calculator. Document your solution and verification.

$$30x^2 - 28 = -58x$$

13. Run the **PARAFUN** program and change the Mode to Radians. Create a three or four sided figure by using a TSTEP that is some multiple of π . Give the graph and TSTEP value, for the figure.
14. Give the Quadratic in the form $Ax^2 + Bx + C$ for the graph of $5(x - 8)^2 + 7$. Verify.