Examination II
Algebra 1

Answer the following questions using the resources required. Make sure you number your answers and give complete responses. Include the use of units when appropriate. Show all work. **DO NOT WRITE ON THIS EXAM!**

1. Sometime during the test save a file from your calculator and email it to me as an attachment. Tell me in the message what the file represents, from which problem.
2. Compare and Contrast Slope and Y-Intercept.
3. Compare and Contrast the FASST and the SLOOW sides.
4. Given the following set of data, answer these questions:

Year	World Population
1980	4 453 000 000
1981	4 528 000 000
1982	4 607 000 000
1983	4 684 000 000
1984	4 760 000 000
1985	4 854 000 000
1986	4 938 000 000
1987	5 024 000 000

a) Make a Scatter Plot of this data, using the Year as the X-values.
b) Give an equation for the Model that best fits this data.
c) Give the name of the type of Model you selected.
d) Produce a graph of the rule with the Scatter Plot.
e) Give the Residuals based on this Model.
f) Give the sum of the square of the Residuals.
g) Explain how strongly you feel this model fits the data and why.
h) What does your Model predict for 1997?
i) Compare that to the real World Population in 1997. (http://profusion.com)
j) If the World Population in 2 000 will be 7 000 000 000, what is the Percent Error based on your model?

5. Given the following set of data, answer these questions:

Year	U.S. Voters	President
1960	68 838 000	Kennedy
1964	70 645 000	Johnson
1968	73 212 000	{Nixon}
1972	77 625 000	{Nixon}
1976	81 603 000	Carter
1980	86 497 000	Reagan
1984	92 653 000	Reagan

   a) Make a Scatter Plot of this data, using the Year as the X-values.
   b) Give an equation for the Model that best fits this data.
   c) Give the name of the type of Model you selected.
   d) Produce a graph of the rule with the Scatter Plot.
   e) Explain how strongly you feel this model fits the data and why.
   f) What does your Model predict for 1988?
   g) If the number of U.S. Voters in 1988 for President Bush was 91 610 000, what is the Percent Error based on your model?

6. Find the Slope and the Y-Intercept of the following.

$$a)\ 85x + 70y = 610$$

$$b)\ y - 590\,000 = 292\,500(x - 4)$$

$$c)\ y = \frac{1}{2}(x - \frac{1}{2})$$

$$d)\ y = \frac{3}{4}(3x - 2)$$

$$e)\ y - 2\,000 = -20(x - 8)$$

7. Verify two of the Slopes and two of the Y-Intercepts from question 6 using the **y** [CALC] **CALCULATE** Menu options.
8. Complete in the Table below for the Linear Model that has a Slope of **¼** and a Y-Intercept of **–3**.

X	0	?	11	⊗	-12	144	-0.75
Y	?	0	?	?	?	?	?

9. Use TABLE, GRAPH, and SOLVER to solve the following. Select only one method per problem, but use all methods at least once.

$$a)\ x + 2 = 2x - 4$$

$$b)\ \frac{1}{2}(x - 2) = 3 - x$$

$$c)\ 3p - 2 = \frac{1}{3}(6p + 5)$$

$$d)\ 88x - 111 = 150(-37 + \frac{44}{75}x)$$

10. How are the OverArching Process Portfolio items different from the items for the 7 Systemic Parts of Algebra?
11. If a student made the following scores on her Portfolio and turned it in a day late, what would her grade be?

OverArching	3
Ability to Test	2
Journal	4
Growth	0
7 Parts of Algebra	2
Free Choice	3
WW Technology	1

12. If two points on a line are **(*, &)** and **(%, $)** what would the slope of that line be?
13. Place the following data into a Program on your calculator, and show it to me.

Year	1956	1960	1964	1968	1972	1976	1980	1984	1988
Pole Vault (feet)	14.96	15.43	16.73	17.71	18.04	18.04	18.96	18.85	19.77

14. Place the data from question 13 into Graphical Analysis. Modify the graph, and produce a Regression Equation to model the data. Include text in the document.
15. Place this same data into Excel, and produce a graph, and similar Regression.
16. Compare and Contrast the two regressions (from questions 14 and 15).

17. Explain how to get a program for your calculator from the Internet. Include steps to place it into your calculator.
18. Sometime during this examination, place a graph from your calculator and the Window that goes with it in a Word document with some documentation.
19. Answer the following for the Mass of a Crab's Body (from Export my Data and Body & Claw).

n	Min	Max	Range	Mean	Median	Mode	Sum

20. Verify the Mean in question 19.
21. Verify one of the values for the Slope and one of the values for the Y-Intercept from question 6 analytically (by using the appropriate formulas).
22. Given the following scenario, determine how long it will take to sink the boat. A boat in the Green River get 100 milliliters of water in it and then starts to take on more water. Every hour that passes the boat takes in 300 milliliters of water for every 100 milliliters in the boat. The boat will sink when it is 44% full and it holds 77 777 milliliters. Complete the Table as you answer the question, and give a Regression equation. State the type of Model this is and include a Graph.

Hour	0	1	2	3	4	5	6	7	…
Incoming (ml)	100	300	?	?	?	?	?	?	…
Total (ml)	100	400	?	?	?	?	?	?	..

23. Describe the pattern seen between the two sets of data for Portfolios examined in the Grade Analysis assignment. Explain.
24. How do you access your ECS1 folder from the FASST side?
25. How long is 1 000 000 minutes? Give the current time and date and state the time and date that it will be 1 000 000 minutes from now. What do you think you will be doing at that time?
26. What is the largest difference between the CASIO and the TI graphing calculators? Give examples. Why do you think this?
27. When is the 4th Nine weeks Portfolio due? How do you know?
28. A mathematics class took an examination. There were three scores in the 60s, four scores in the 70s, and two scores in the 90s. The class average (mean) would most likely be an A, B, C, D or F? What would the Range of class averages be for this set of data?

29. Bert and Bart decided to start saving money. Bert can save 3 dollars each month, and Bart can save 5 dollars. At this rate, after how many months will Bart have exactly 10 dollars more than Bert? Pick the best equation from the list below to help you solve this problem. Then use all of the equations to get your answer. Report each answer and associate it with its equation.

$$a)\ 5x - 3x = 10$$

$$b)\ 8x = 10$$

$$c)\ 10x = \frac{3}{5}$$

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

30. The **time** it takes a student to walk home from school is related to the **distance** between home and school. Answer the following questions:
    a) Identify which quantity is independent and which quantity is dependent in this situation.
    b) Sketch a reasonable graph that describes this situation.
    c) If Jackie walks at a rate of 3 miles per hour, complete the table shown

Distance in Miles	**Time in Minutes**
3	60
5	?
?	120
7	?
?	?

    d) Graph the data shown in the completed table.
    e) Write an equation to model this relationship.
    f) If Jackie increases her rate by 1 mph, how far was she from home if it took her three hours to walk that distance?