Name:_____ Period = _____

Sheet # 1131

The Devil and Daniel

The devil made a proposition to Daniel. The devil proposed paying Daniel for services in the following way: On the first day, I will pay you $1000 early in the morning. At the end of the day, you must pay me a commision of $100. At the end of the day, we will calculate your next day's salary and my commision. I will double what you have at the end of the day, but you must double the amount that you pay me. Will you work for me for a month?

PART A

Note: "...what you have..." is ambiguous. Ask for clarification if needed.

1. After reading the salary proposal, decide if you would work if you were Daniel. Write down your answer.

_____

2. Complete the following chart.

Day	Salary for Daniel		Commision for Devil		Net Pay at the End of Day	
1	$1000		-$100		$900	
2	$1800					
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
...						
30						

3. On the basis of the table you completed, would you stand by your decision?

_____ Explain why or why not. _____

_____

_____

4. If you would not work for a month, for how many days would you work?

Note: "...what you have..." is ambiguous. Ask for clarification if needed.

_____

4b. How much money has Daniel collected on his last day? (Add all Net Pay) (END OF DAY)

4c. If Daniel kept working, at the end of what day would the Devil be ahead? HINT: TOTAL SUM OF ALL OF DANIEL'S NET PAY WOULD BE NEGATIVE.

5. From reading the problem, what type of curve would you expect your salary data to generate?

_____

6. From reading the problem, what type of curve would you expect the commission data to generate?

_____

7. Is the salary scheme realistic?_____

PART B.

Discussion and Extension

B 1. If you graphed your salary data, what type of graph would you expect to obtain?

_____ Why? _____

_____

B 2. In your own words, compare the graphs of the salary data and the commision data.

_____

B3. Leaving everything else the same, how much (SALARY) would Daniel need on DAY 1 so he could work for 30 days? for 40 days?

B4. How many days would Daniel work if his salary were to be multiplied by 2.10 instead of 2 (no change for Devil)?

B 5. To two decimals, what factor would Daniel's salary have to be multiplied for him to be able to work for a month?

B 6. Find an explicit formula for the sequence of net pay in the original problem, i.e. $a_n = \ldots$?