

Monthly Profits The table shows the monthly profits a_n (in thousands of dollars) of a clothing manufacturer over a period of 36 months.

DATA	Month	Profit, a_n
	1	250
	2	220
	3	194
	4	170
	5	150
	6	132
	7	116
	8	102
	9	90
	10	79
	11	70
	12	61
	13	54
	14	47
	15	42
	16	37
	17	32
	18	28

DATA	Month	Profit, a_n
	19	25
	20	22
	21	19
	22	17
	23	15
	24	13
	25	12
	26	10
	27	9
	28	8
	29	7
	30	6
	31	5
	32	5
	33	4
	34	4
	35	3
	36	3

- Use the *regression* feature of a graphing utility to find an arithmetic sequence, a geometric sequence, and a quadratic sequence for the data. Let n represent the month.
- Create a table that compares the actual data values with the values given by each sequence.
- Which sequence do you think best fits the data? Explain your reasoning.
- Use each sequence to predict the monthly profit after 38 months.
- Which sequence do you think is the best one to use to predict the monthly profit of the clothing manufacturer in the future? Explain your reasoning.
- Use summation notation to write the sum of the monthly profits over the period of 36 months. Use the sequence you chose in part (c). Find the total monthly profit of the clothing manufacturer over the period of 36 months.