Bad Investment Advice and ways to avoid it

Only for Financial Geniuses
Can you Solve this investing Puzzle?

The Puzzle

- Initial Investment (Principal): $1,000
- Monthly Contribution: $100
- Annual Interest Rate: 5%
- Compounding Frequency: Monthly
- Time Horizons: 10, 20, and 30 years

Questions

- How much will the investment grow to in 10, 20, and 30 years?
- How does increasing the annual interest rate by 1% (to 6%) impact the investment's growth over the same periods?

A Formula ?

$$A = P \times (1 + \tfrac{r}{n})^{nt} + PMT \times \left(\frac{(1+\frac{r}{n})^{nt}-1}{\frac{r}{n}}\right)$$

Or Spreadsheets?

	Interest rate	5%	
	Starting capital	$ 1,000.00	
	Monthly addition	$ 100.00	
Month	Account balance $	Monthly added $	Interest $
0	$ 1,000.00	$ -	$ 4.07
1	$ 1,104.07	$ 100.00	$ 4.50
120	$ 17,065.21	$ 100.00	$ 69.53
240	$ 43,233.75	$ 100.00	$ 176.14
360	$ 85,859.53	$ 100.00	$ 349.80

	Interest rate	6%	
	Starting capital	$ 1,000.00	
	Monthly addition	$ 100.00	
Month	Account balance $	Monthly added $	Interest $
0	$ 1,000.00	$ -	$ 4.87
1	$ 1,104.87	$ 100.00	$ 5.38
120	$ 18,038.19	$ 100.00	$ 87.80
240	$ 48,551.00	$ 100.00	$ 236.32
360	$ 103,194.79	$ 100.00	$ 502.31