

Worksheet 8: Mixed Model for CO₂ Added to Atmosphere

As a first approximation, we can assume population grows geometrically, and that the number of autos in use does also. If on the average each auto releases 75lbs of CO₂ per year, then we can compute (first) the number of autos each year, (then) the amount of CO₂ added to the atmosphere each year, and then with a running total column, keep track of the total CO₂ added during n years.

Assume there are initially 100,000 autos in the region, and that the number of autos is growing by 8% each year. Fill in the table below, then verify that the final column exhibits mixed-model growth and find its difference and functional equation.

n (year number)	a_n (number of autos operating in year n , in 1000's)	c_n (CO ₂ released in year n , in 1000's of lbs)	s_n (total CO ₂ released in years 0 through n)
0	100	7500	7500
1	108	8100	15600
2			
3			
4			
5			
6			