Answer on Question #63338 – Math – Calculus

Question

Suppose the rate of savings in Malaysia is given by

$$\frac{dS}{dt} = 5.1e^t + 400t^2 + 6000,$$

where *t* is the time in years, and *S* is the amount of money saved in billions of RM.
Find the function *S*(*t*) which gives the total amount of money saved. You may assume that RM0 is saved at t = 0.

Solution

$dS = (5.1e^t + 400t^2 + 600)dt$
$\int dS = \int (5.1e^t + 400t^2 + 600)dt$
$S(t) = 5.1e^t + \frac{400}{3}t^3 + 600t + C,$
where C is the initial amount of money.
Answer: $S(t) = 5.1e^t + \frac{400}{3}t^3 + 600t + C.$