***Application of the Integral (Simple)***

***Problem Statement (Charge and Current):*** The electric current (measured in milliamps) that flows in a computer circuit can be expressed as a function of time

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What total charge passes a point in the circuit in 50 milliseconds?

***Solution***: Charge (q) is the integral of current. Therefore, we can express the charge as

 

At *t* = 0, *q* = 0. Therefore, we can determine the constant

 *c* = 0.

So, 

 

So 15 microcoulombs of charge pass through a point in the circuit.