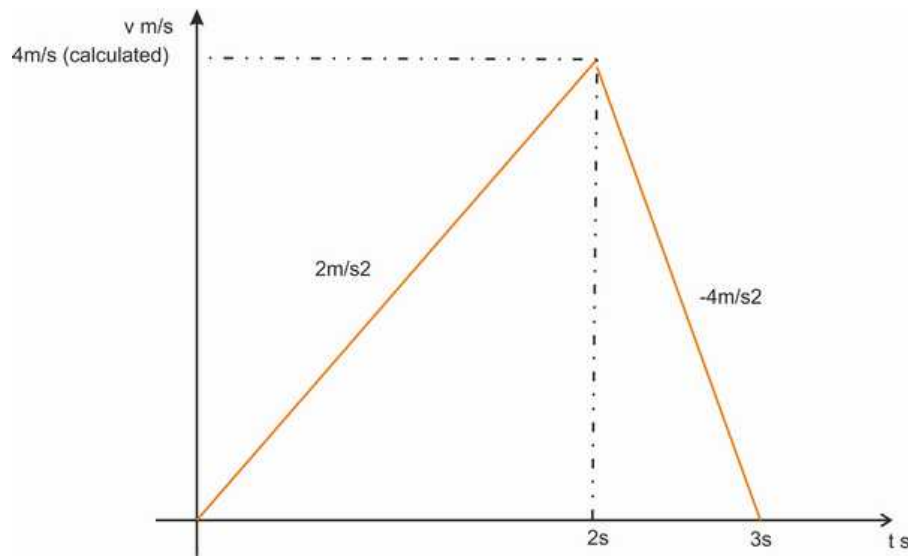**Example:** A car starts from rest acquires a velocity v with uniform acceleration $2ms^{-2}$ then it comes to stop with uniform retardation $4ms^{-2}$. If the total time for which it remains in motion is 3 sec, the total distance travelled is:

a) 2 m

b) 3 m

c) 4 m

d) 6 m

{Hint: For solving this problem, we draw the graph of the problem,

Accordning to graph, let the time when it reaches maximum velocity be T, and the maximum velocity be V.

$\Rightarrow$V = 2XT and also V = 4X(3-T)

Equating the equations,

2T = 12-4T = V

$\Rightarrow$6T = 12

$\Rightarrow$T = 2

$\Rightarrow$ V = 2T = 4

Calculating the area under the graph using the calculated parameters, Area = 1/2 X 4 X 3 = 6m

So , area under the graph is 6m = displacement . Also, as all the area is on the positive side, so distance = 6m.

}