Question: Initial velocity of a partical is u(at t=0) and acceleration f=at (t=time,a=constant) then which option is right from followings

1.v=u+at*t
2.v=u+at*t/2
3.v=u+at

Solution: In general the velocity of the accelerated body is calculated as

$$v = \int_0^t f dt = \int f dt + v|_{t=0}$$

In our case

$$v = \int f dt + v|_{t=0} = \int at dt + u = u + \frac{at^2}{2}$$

So the **answer is 2**