

Mathematics - Sums

1. Find the sum of first 10 natural numbers.

Solution:

$$S = n(n+1)/2 = (10 * 11)/2 = 55$$

2. Find the sum of first 5 even numbers.

Solution:

Even numbers: 2, 4, 6, 8, 10

$$\text{Sum} = 2 + 4 + 6 + 8 + 10 = 30$$

Physics - Derivations

Derivation of velocity formula

Starting from acceleration:

$$a = dv/dt$$

Integrate both sides with respect to time:

$$\text{Integral of } a \, dt = \text{Integral of } dv$$

Result:

$$v = u + at$$

where:

v = final velocity

u = initial velocity

a = acceleration

t = time