Answer on Question #59418, Physics / Mechanics | Relativity

The exhaust gas of a rocket is expelled at the rate of 1300 kg/s, at the velocity of 50 000 m/s. Find the thrust on the rocket in newtons?

Find: f – ?

Given:

$\frac{\Delta m}{\Delta t} = 1300\ \text{kg/s}$

Δv=50000 m/s

Solution:

Newton's Second Law in scalar form:

$f = ma$ (1),

where a – acceleration

Acceleration:

$a = \frac{\Delta v}{\Delta t}$ (2)

(2) in (1): $f = \Delta v \times \frac{\Delta m}{\Delta t}$ (3)

Of (3) $\Rightarrow$ $f=65\times10^6$ N

Answer:

65×10^6 N

65×10^3 kN