

I-95

A rocket of mass m is fired vertically upward from rest. The rocket's engine produces a thrust of constant magnitude F_{thrust} for t_{thrust} seconds. Determine the maximum height reached by the rocket (H) as a function of F_{thrust} , t_{thrust} , m , and g .

Motion Information Body Diagrams

Free-

Event 1: Event 2: Event 3: *before engine turns off* *after engine turns off*

$t_1 =$ $t_2 =$ $t_3 =$

$r_1 =$ $r_2 =$ $r_3 =$

$v_1 =$ $v_2 =$ $v_3 =$

$a_{12} =$ $a_{23} =$



Mathematical Analysis

Questions

If $g = 0 \text{ m/s}^2$, what should H equal? Does your function agree with this observation?

If $F_{\text{thrust}} = mg$, what should H equal? Does your function agree with this observation?

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