

[mex18] Rocket launch in uniform gravitational field

A rocket is launched from rest against a uniform gravitational field g by burning fuel at a constant rate, $m = m_0(1 - \alpha t)$. The speed of the exhaust gases relative to the rocket is u .

- (a) What is the minimum rate α_{min} at which fuel must be burned to ensure lift-off at $t = 0$.
- (b) Calculate the velocity $v(t)$ of the rocket and the height $h(t)$ above ground.

Solution: